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Fuel Usage is *Outstanding Topic at S. A. E.* Annual Meeting

Discussion in Detroit sessions indicates that the average engineer seems to have changed from an attitude of opposition to front-wheel drive cars to one of active interest.

By LESLIE PEAT

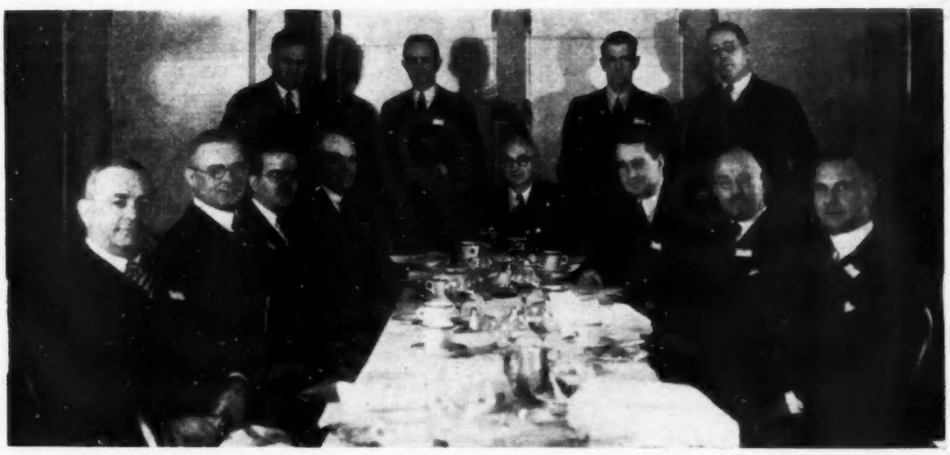
ENGINEERS will play a larger part than ever in motordom during 1930, it was generally felt, as the Society of Automotive Engineers' Annual Meeting came to a close in Detroit on Jan. 24. From the opening of the sessions four days before, when the constitution was changed in several important respects, to the final meeting of the week on front-wheel-drive practice, the papers were received by unusually large attendances and discussions were lively and illuminating.

The topic of fuels and various aspects of fuel uses in engines got far more attention from the technical men at this meeting than did any other single subject. Further developments of the cooperative S.A.E.-A.P.I. fuel research program were outlined by Bureau of Standards representatives and actively argued about both by petroleum company representatives and passenger car engineers. Detonation, mixture distribution, downdraft carburetion and cold carburetion were other phases of the fuel question which got special attention, while other aspects of fuel performance were discussed in connection with a Diesel engine session, held on last Thursday morning.

Despite this heavy emphasis on fuels, however, some striking tendencies were brought to light in connection with such other aspects of the automotive engineers' problem as front-wheel drives, how to handle inventors and inventions, where body design should go in the future, riding comfort, metalclad airships, manufacturing problems and a host of similar matters.

The average automotive engineer seems to have changed his general attitude in recent months toward the front-wheel-drive automobile, if the atmosphere of this annual S.A.E. meeting was any guide. A majority of the technical men seem to have revised their view on front-wheel drives from one of generalized opposition to one of definite interest, as evidenced by their disposition to argue about the advantages and disadvantages of front-wheel-drive details and their specific effects. It was this development which was instrumental in making the special front-wheel drive session so definitely interesting to those who attended.

The 700 or more members who attended the sessions, making as it did a new record, indicated a



The last meeting of the 1929 council of the S.A.E. was held at the annual meeting held in Detroit on Jan. 20. The personnel of the council consisted of the group above, including (left to right, seated) Vincent Apple, O. C. Berry, C. B. Whittelsey, Jr., Coker F. Clarkson, W. R. Strickland, Edward P. Warner, O. A. Parker and W. T. Fishleigh; those standing are E. W. Templin, F. C. Horner, F. G. Whittington and J. W. White

reaching out on the part of the engineers in the industry. The sessions very definitely brought out more interest in the subject matter of the prepared papers and in discussions than was noted heretofore.

As Alfred Reeves, general manager of the National Automobile Chamber of Commerce pointed out, engineering is again coming in for the interest on the part of the buying public it held in the early days of the automobile business. The time when the prospective purchaser wanted to know why the car would run and how long it could be expected to operate and give an adequate measure of transportation, is finding something analagous today when high standards of performance are becoming salient sales points. Transportation, then transportation with style, and now—transportation, elegance with super-performance; this seems to be the evolution in car appeals.

Proposed changes in the constitution of the S.A.E., indicate, too, the feeling that 1930 will be important from an engineering point of view. First, it was suggested that in the future all committee members and officers must be full members. This change means that engineers will have complete charge of destinies of their society. Second, the constitution now provides for no first vice-president, giving a wider latitude to the nominating committee for naming the active head of the association. These changes will not, of course, alter the results of organized activity to any great degree, but they seem to indicate vitality.

The Standards Session on Monday was a routine proceeding attended by members of the Standards committee, whose chief function was to pass on the standards that were submitted in printed form. The majority of the standards were accepted without discussion following the report of the chairman of each division. In several instances where last-minute changes were proposed they were largely in the nature of editorial corrections and minor changes in dimension. Two additional standards were adopted by the aircraft division and the recommendation on body skeleton nomenclature was referred back to the committee.

At the Production Session held Monday evening and presided over by E. P. Warner, an informal talk on the Economics of Production was given by Dean Dexter S. Kimball, Sibley College, Cornell University.

Dean Kimball, with his uncanny facility of interpreting economic questions so that the plain man can understand them, discussed the relationship of such fundamental questions as division of labor, dealing with the facts of specialization and the "Law of Diminishing Returns" in its effect upon productivity.

Basic concepts, he feels, have been neglected in the "Law of Factors" which recognizes that in a combination where a number of factors are involved, only one or two factors at the most can operate at high efficiency. Some factors must be at low efficiency and should be permitted to remain at those low efficiencies. This relates particularly to the operation of expensive machine tools tended by one or more operators where the machine should operate at the highest efficiency, whereas the operator may not necessarily be busy all the time and yet may be performing his duty by watching this expensive mechanism.

Dean Kimball stressed the balance sheet method of detailed calculation wherein costs are balanced against gains, the procedure being particularly important in handling problems.

The mathematical determination of economic production lots is the coming thing, according to the speaker. He predicted that within a comparatively short time production estimates and the determination of intermittent lots will be based entirely on the formulas which are being developed today.

By far the most valuable feature of this S.A.E. annual meeting is found in the informal discussions in the lobby and around the dinner tables, for this informal atmosphere tended to bring out many ideas that might not have been discussed on the floor.

In his address before the S.A.E., David Lawrence, editor of the *United States Daily*, declared that the industries of the nation were watching with interest the automobile business. "Readjustments in this industry bid well to show other industrial groups how they can best meet the conditions of the day," he said.

"We have quickened our whole life by automotive transportation. It seems to me that as the average man becomes more and more acquainted with transportation by the automobile he is going to become more discriminating, he is going to wonder about this problem of replacement, which has so much to do with consumer confidence."

S. A. E. Officers Installed

OFFICERS installed at the annual meeting of the Society of Automotive Engineers, and who will be in charge of the Society's affairs for the next twelve months are as follows:

Edward P. Warner, president; *C. B. Whittelsey, Jr.,* treasurer; *Chance M. Vought, vice-president, representing* Aircraft Engineering; *Bruce G. Leighton, vice-president, representing* Aircraft Engine Engineering; *Otis D. Treiber, vice-president, representing* Diesel-Engine Engineering; *Arthur J. Scaife, vice-president, representing* Motor-Truck and Motor-Coach Engineering; *George L. McCain, vice-president, representing* Passenger-Car Engineering; *William N. Davis, vice-president, representing* Passenger-Car-Body Engineering; *John Younger, vice-president, representing* Production Engineering; *and Frederick C. Horner, vice-president, representing* Transportation and Maintenance Engineering.

The officers, as listed above, with the following, constitute the Council membership: W. R. Strickland, as Past-President; *W. G. Wall, as* Past-President; *W. T. Fishleigh, J. A. Moyer, O. A. Parker, as* Councilors, *and Ralph R. Teetor, Frederick K. Glynn and Arthur W. S. Herrington.*

Practical Aspects in New Devices Are of Paramount *Importance*

An invention may be ingenious and workable, but it also must be technically and economically sound before acceptance, W. J. Davidson, General Motors Corp., tells S.A.E. members.

PERHAPS one of the most lively discussions during the sessions of the annual meeting of the S.A.E. in Detroit last week followed a paper on methods of handling new devices read by W. J. Davidson, executive secretary, General Technical Committee of the General Motors Corp. Several men who have patents to their credit, patent attorneys and engineers who study patents brought in by employees and inventors outside their respective organizations, joined in discussing the outstanding problem of dealing with the new ideas in the industry.

The discussion brought out the fact that there is considerable unanimity among factories in the method of studying patent and idea suggestions. Most of the speakers agreed that one of the hardest problems is to talk to a practical mechanic, who perhaps has been working on automobiles, and has no knowledge of physics or the fundamental science of mechanics, and has no access to previous records, so that he can find out previous failures in the line of invention in which he is interested.

W. J. Davidson
Executive Secretary, General Technical Committee, General Motors Corp.

Quite often the mechanic is so close to his own work that he lets his imagination run wild on new devices more or less foreign to his own experience. Sometimes this class of inventor has spent good money in making up models and because of their undoubted ability are not inclined to take suggestions from others who appear to be less of a practical mechanic than they. In such cases, an argument is sure to result, and this presents one of the most difficult cases as there is such a wide variation in the point of view of the two men involved.

Mr. Davidson, in his paper, said that progressive business was always on the lookout for new ideas, and a certain portion of the public has been dissatisfied with things as they now stand and are continually trying to improve them. Naturally, in order to realize a return for the time, money and brains used to develop their ideas, inventors are continually bringing their inventions to the attention of some manufacturer to produce and sell.

"Every year we have presented to General Motors, through various channels, inventions totaling in the neighborhood of 6000," he continued. "Previous to the organization of the New Devices Committee it was difficult to formulate a corporation policy dealing with inventions. As a result the inventor sometimes did not receive proper attention.

"To remedy this condition, the New Devices Committee was organized as a central clearing house for all inventions submitted direct to General Motors Corp. or through any of its divisions or executives. Instead of allowing a meritorious device to drift by a devious route through various channels, the New Devices Committee steers it direct to the person most vitally concerned, and does so with a minimum amount of delay. Some of the devices are valuable, while others are not technically and economically sound, so there must be some way to separate them in such a manner that nothing with merit will be rejected—a 100 per cent inspection that does not pass any bad ones nor overlook any good ones.

"There are many ways of handling this matter. This paper briefly outlines a procedure which has developed as the result of handling thousands of devices and may aid others in the industry who are faced with the problem of 'what to do about inventions.' No one man is competent to determine a corporation's interest in all inventions. Industry is too complex. Very often a device holds possibilities one man might overlook. In considering several thousand devices, only a body of men, skilled in the various lines in which the corporation is interested, can be trusted not to overlook a meritorious invention. So for General Motors a committee known as 'The New Devices Committee' was formed. This committee is composed of three vice-presidents of the corporation, representative of the Patent Department, engineers from the Research Laboratories and the manufacturing divisions, and a suitable engineering and clerical staff. In addition, the committee has authority to call upon any of the engineering facilities of the corporation for assistance.

"The great number of inventions or ideas submitted renders it impracticable for the main committee to consider each one, so a sub-committee has been created, consisting of a number of engineers and other employees of the corporation to whom every such invention is submitted. The personnel of this committee is such that at least one or two members thereof are fully

acquainted with the subject matter of any invention submitted. The secretary of the committee and his assistants go carefully over each invention submitted, and if the data furnished by the inventor are not sufficient to give a clear understanding to the sub-committee, he requests additional information.

"The secretary may also, if necessary, submit the invention to someone in the organization having special knowledge of the subject matter thereof, and he may also, if he deems is necessary, ask the Patent Department of the corporation for a report on its novelty, so that when it is submitted to the sub-committee it will have all of the information and data relating to the invention which is necessary to enable it to arrive at a prompt decision as to its value to the corporation.

"There are certain classes of inventions, such as perpetual motion machines, etc., which are not of any interest to the corporation, and these are acted upon by the committee's secretary and courteously declined.

"The sub-committee has full authority to finally pass upon the merits of inventions of certain classes, but in all cases involving certain things that the corporation is interested in, or where the members of the sub-committee are not unanimous in their opinion of a particular invention, the matter is referred to the New Devices Committee; the sub-committee has also the right to refer to the committee any invention it believes meritorious.

Corporation Wants Ideas

"The corporation is interested in receiving ideas or suggestions relating in any way to the manufacture or improvement of any of its various products—consequently the term 'New Devices' receives a very flexible interpretation by the committee; and although the great majority of devices submitted to the committee consist of articles or devices which have been patented or for which applications for patent are pending or are proposed to be filed, quite frequently a device, article or idea is submitted which is not capable of any patent protection.

"It is these last mentioned items and the ones upon which no applications for patent have been filed, that cause the committee the most concern, as frequently in a large organization someone of its employees is working upon or has already perfected a similar idea, and it is sometimes difficult to persuade the person submitting such idea that the corporation has not attempted to appropriate it instead of giving him due credit therefor. It is for this reason that the committee is very loath to consider any idea or invention upon which its owner has not at least obtained the minimum of legal protection.

"The committee always advises the person desiring to submit ideas that before doing so he obtain such protection. Occasionally, however, the data relating to an idea is forwarded by the inventor with his first communication.

"For the past few years the committee has been called upon to handle several hundred inventions per month. Obviously, the proper handling of such a number in a prompt, fair and courteous manner entails considerable clerical work and necessitates a highly effective office routine. The secretary of the committee has complete charge of the organization dealing with inventions and all contacts.

"A file is set up for each invention submitted and two types of file cards are made out, one for the name of the person or persons submitting the device, and one to classify the device itself. This furnishes an efficient means of cross-checking and facilitates the location of a file. After the inventor's letter has been promptly acknowledged, the invention is referred to engineers who have expressed interest and have made a careful study along similar lines, and their comments on the construction are requested. Submitting a device by letter secures fully as much attention in every way as submitting a device in person. Besides, submitting a device by letter may save the inventor considerable time and money—especially if he lives a long distance from Detroit, since the committee's activities are centered in that city. It so happens, however, that 15 to 20 per cent of the devices are submitted by personal contact. In such cases the inventor contacts with the secretary or his assistants. In order to present the device intelligently to the committee, the secretary must have an adequate description of the invention, the necessary patent information and a commercial proposition if possible. The secretary then obtains all pertinent comments on the construction in the manner described above and adds the invention to those to be presented to the committee at its following meeting.

"The minutes of meetings of the New Devices Committee are carefully compiled and filed, since they contain the authority by which the secretary is guided in replying to the inventor. At any time in the future these minutes are available as a check on the committee's decisions and have proved invaluable in determining the exact attitude of the committee at that time.

"Frequently, inventors ask to be present at the meetings, but through long experience we have found such a procedure a handicap to all concerned. We have a fixed rule with no exceptions. No person submitting an invention or idea is permitted to be present at any meeting of either the committee or sub-committee.

Inventor Notified Promptly

"All inventors are promptly notified of the action of the committee, and if the invention is of no interest, they are so advised, but no reasons are ever given for such determination, as from experience we have found that to do so is very apt to cause a more or less acrimonious discussion which serves no good purpose.

"Should the invention be one in which the corporation might be interested—and it might be said here that the proportion of such inventions is very small indeed—

the inventor is contacted with, and before anything further is done an agreement is entered into with the inventor clearly setting forth the terms upon which the corporation will undertake its investigation of the invention and the compensation it will pay the inventor in the event of its making use thereof.

"It has been our experience that a very small percentage of the total inventions submitted can be economically manufactured and sold, some of the reasons for which are as follows:

"The number of inventions submitted to us during a year runs into the thousands. The percentage which we can even consider seriously is pitifully small. And for the thousands of inventions we cannot use, too often the inventor has spent months and even years, working out the most minute detail of some device that is a direct contradiction to physical laws. He may even sacrifice the comforts of life to build a model when a paper drawing should have been sufficient to expose its inherent unsoundness. And this financial and personal sacrifice on the part of the inventor is not only a matter of disappointment and punctured ambitions, but is also an unjustifiable waste of money and labor.

Business Wants New Devices

"Frankly, as mentioned previously, business is always on the lookout for the good new devices that are technically sound and can be economically produced and sold. The manufacturer wants them as a source of profit. Why then is the percentage of devices accepted so small? The unsuccessful inventor has the habit of looking around toward others for reasons when he himself is the one at fault. He is really unprepared to submit an invention; he probably has no knowledge of the previous commercial developments in the art. The inventor does not invent in his own line. Too often his knowledge is limited along the line in which he tries to invent, yet he may rank high in his own line of business. The majority of suggestions submitted to us come from those who have a little or no experience or contact with the automotive industry.

"Of course, it is true that some meritorious inventions are discovered by accident, but the accidental discovery is not likely to occur unless the inventor is educated and trained to observe in a particular field and is in everyday contact with similar matters.

"To get back to the reasons for the inventor's disappointment, he may have little idea of the requirements of the public, production, or sales. Even granted that he has this essential background, perhaps he has not paid sufficient attention to the invention itself. He must be sure that it works efficiently after exhaustive tests; that he has made it as simple as he knows how; and, he must have established broad legal claims to the principle as well as to the construction details.

Perfect Car is Goal

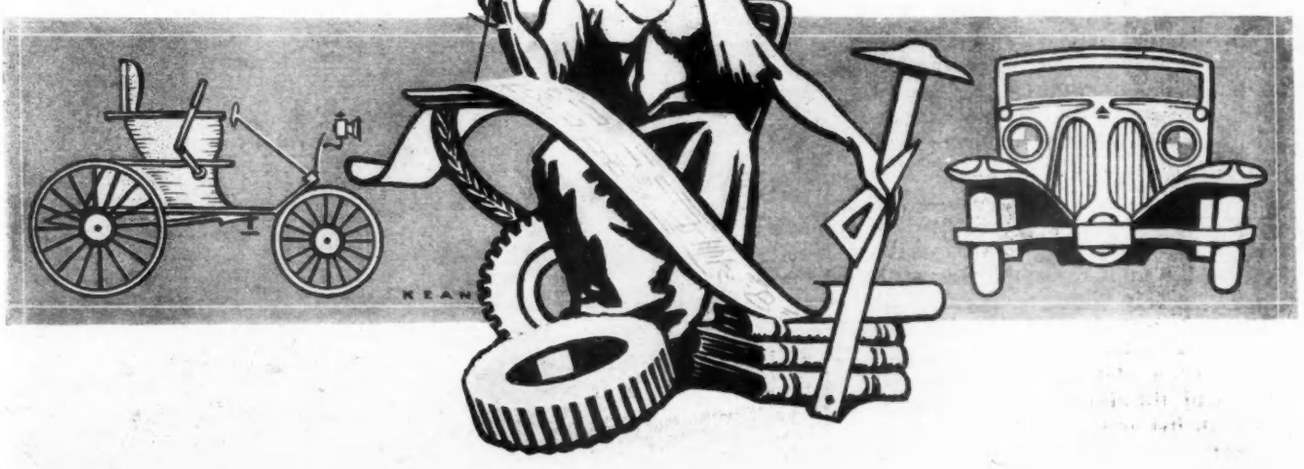
"In closing, I should like to revert to the question of a corporation's attitude toward the inventors. Needless to say, it decidedly should not be inimical. We are both striving toward the same goal—the perfection of the automobile. The inventor may have a good idea—many good ideas do emanate from outside. We must be cognizant of this fact and welcome the opportunity of examining all ideas with the view of ultimately purchasing them—provided they fulfill the requirements.

"To be forewarned is to be forearmed, and the inventor approaching industry had best realize that he is dealing with trained engineers and leaders in commerce, who have every facility for test, research and development and whose ability has built one of the largest industries ever known. This fact should cause the inventor, who is unprepared and impulsive, to pause and consider—but should encourage the inventor who is prepared and who has built on a sound foundation."

George L. McCain of the Chrysler Corporation pointed out that the automobile was a tremendous compromise. Public demand, competition and style have dictated engineering policy. Revolutionary inventions have been incorporated into automobiles in advance of public acceptance of the principles involved and have failed, only to reappear again when the public, or related conditions, were ready for them. Public demand cannot be defined as a desire for a definite thing, but merchandisers of automobiles should and do know what the public will accept and that must be what we call public demand.

"We know of many principles which could be applied in devices for the automobile, most of which would please a few automobile owners and which would positively help sell, regardless of cost, whatever car applied such a device. But they might be useless or unnecessary to the large majority of car users," he said. "Therefore, we must say to inventors 'not interested' sometimes when the device presented is practical.

"Inventors often ask 'What can we work on, what can we submit that you *do* want?' There are many things desirable, and I cannot here attempt to name them, but we have suggested some things to those who ask this question, such as 'Show us how to increase the thermal efficiency of the present gas engine,' or 'Show us a cooling fluid that is cheap, that has a high boiling point and that will not corrode metals or rubber,' or 'How can we save some of the waste power that now goes through the exhaust?' "



Chicago Show Reports Reinforce With Improved *Sales and Con*

Optimism of executives in attendance business, on the average, is closer it was thought possible

By NORMAN

OPENING of the Thirtieth National Chicago Automobile Show on Jan. 25 found much information developing to reinforce the confidence about automotive industrial conditions expressed by a majority of factory executives at the New York Show a few weeks back.

Scores of automotive leaders, occupying positions of authority in the companies manufacturing the 43 makes of cars which were on exhibition at the Coliseum, were in Chicago for the opening day of the show. A vast majority of them seemed really satisfied with the development both of production and retail sales thus far in 1930.

Readjustment of internal policies, dealer contracts and various aspects of dealer relationships still are giving concern to most of these men, but the realignment process seems to be definitely under way in most instances.

More than 300 cars and chassis models were on display in an entirely new decorative background at the Coliseum this year to greet the good-sized crowd which came through the gates at the opening of the show on Saturday afternoon. Samuel A. Miles, veteran manager of the National Shows, announced late last Saturday afternoon that Chicago, like New York, had shown an appreciable increase in opening day attendance as compared with 1929.

Attendance Gains

Mr. Miles' belief that attendance throughout the week would be better than it was last year, was given weight by reports of show attendances from a number of major cities which have held exhibits in the last few weeks. In a majority of instances, attendance has been ahead of last year, although not equal to that of some previous record years.

The interior decoration of the Coliseum this year depicted famous English historical scenes in a mile-long panorama. The various booths were divided by black and white picket fences, reminiscent of an English countryside, which gave the entire exhibit an appearance distinctly pleasing and distinctly different from that on any previous year.

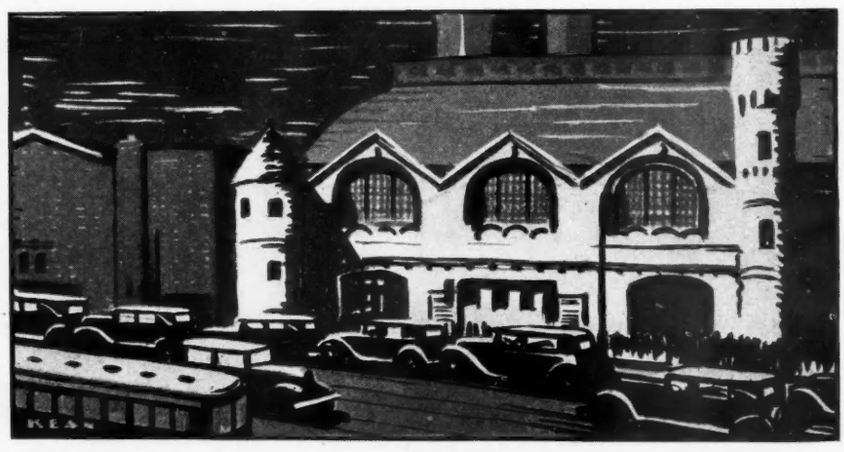
The models actually displayed were almost identical with those which greeted the public at the New York Show early in January. The new Marmon-Roosevelt was the only entirely new model to be found, although Chevrolet had on display an edition of its standard coupe equipped with five wire wheels and priced at $655.

It was also learned at Chicago that, while the earlier experimental models of the Jordan Speedway series, described in the Jan. 11 issue of *Automotive Industries*, carried four-speed transmissions with direct in third, production cars of this series will be equipped with the more standard type of four-speed internal gear speedbox, in which direct drive is taken on fourth speed.

While it was too early to develop detailed and accurate figures on January automobile production and sales this year as compared to last, reports from a number of manufacturers, covering the early weeks in the month indicated gains over last year in a surprising number of instances.

Contact during the early hours of the show with executives of a majority of the important producers of passenger cars would indicate that, on the average, January retail sales this year have come much closer to the total for January, 1929, than anybody would have cared to predict six weeks ago.

Those companies which show definite increases over 1929—and there are several of them—can trace some of that percentage gain, usually, to the fact that for one reason or another they had not got into heavy production until late in January, 1929, or to the fact that their progress in the establishment of a greater number of retail outlets had been particularly successful during the last 12 months. Certainly any executive scrutinizing the current progress of sales by companies from an analytical, economic standpoint will want to study with care all announcements about percentages of increase in sales or production, as compared with



Confidence in *1930 Developments* *tracts since* New Year Opened

gives assurance that January retail to the same month in 1929 than to predict six weeks ago.

G. SHIDLE

last year, before accepting them at face value just at this time.

Even taking into account the statistical and economic dangers in too-ready acceptance of percentage increase or decrease figures, however, there can be no question that the year 1930 thus far has been opening up more favorably than most executives down in their hearts though it would.

There is general agreement to the fact that every sale is harder to get this year than it was last. Even those companies which report relatively good production and sales records for the first few weeks of January indicate that those records are being made as a result of harder work by dealers and more virile retail selling than ever before. The idea that "workers will win in 1930" is being borne out by the experiences of the early weeks of the year.

Almost every passenger car executive seems still to be just a bit concerned about the actions of his competitors should sales really begin to develop in any volume during the latter part of February and the first part of March. Up to the present time practically every car manufacturer seems to be adhering to his promise not to force cars on retailers and not to produce in excess of pretty clearly indicated demand.

Practical difficulties, of course, are besetting the path of every car maker in his effort to fulfill his promises in this regard. It is easy to say that production should be geared to dealer demand, but quite another thing to find out in any specific instance just what that "dealer demand" is. A number of factories, which are sincerely trying to schedule their factory output purely on the basis of voluntarily-made advance estimates of requirements by dealers, are being met with the very practical difficulty of getting any considerable proportion of their distributors and retailers to come through with any advance estimates of requirements sufficiently ahead of the actual production period to permit factory schedules to be made up.

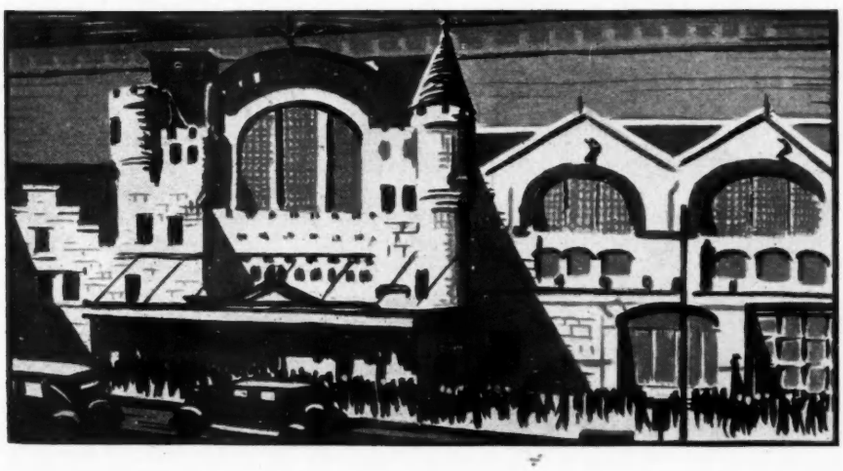
This is just one of the numerous practical obstacles with which factories are being faced this year, when they are definitely and actively trying to work out a readjustment of dealer relationships in many ways to the advantage of their retail organizations. There is every indication, however, that a majority of executives are determined to follow through with these efforts to better dealer conditions, whatever practical hurdles may be in the way.

The developments in the automotive industry, both as regards its contact with the public and as regards its adjustment of internal policies, as brought out at the opening of the Chicago Show, are such as to warrant an increased confidence in the belief that 1930 will turn out to be one of the most progressive and stabilizing years that the industry ever has had.

New Marmon Exhibited

With the relatively short time elapsing between the New York and Chicago Automobile Shows, it was not surprising that the latter failed to develop much in the way of new models. The only important chassis model which had not been shown at New York but which was exhibited at the Coliseum was the new edition of the Marmon Roosevelt, a brief announcement of which was carried in last week's issue of *Automotive Industries*, in connection with the Detroit Automobile Show.

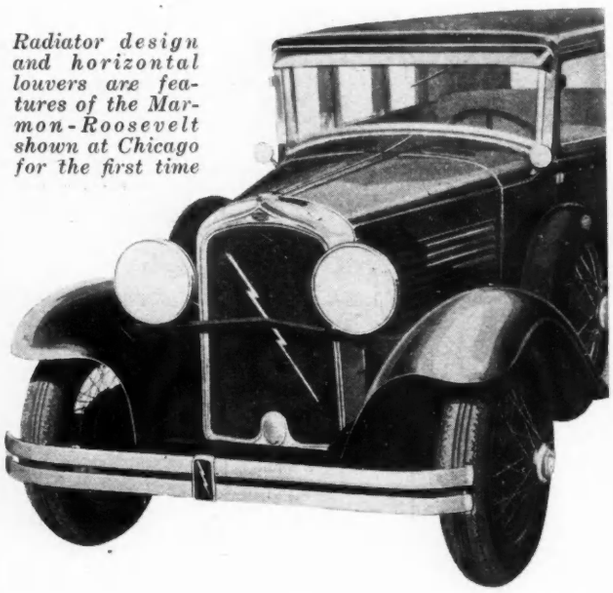
In this car, which has now assumed the distinctively Marmon appearance characteristics, as exemplified by the hood and radiator, few mechanical changes have been made. It is claimed that horsepower has been increased some 10 per cent, to 77 hp., through the cleaning up of manifolding and ports, and improved carburetion.



In the bodies the most noticeably different features are the characteristic Marmon radiator, the hood with its two sets of horizontal louvers, and the submerging of the "Roosevelt" name in the new nameplate. Tire size has been changed with the section increased to 5.50 in. Six optional colors are available. Important body details which are retained include the "fingertip control" on the steering wheel, swinging windshield,

double ventilators in the top of the cowl, adjustable steering column, and dash gasoline gage. Price changes were announced last week, the revisions being upward, generally.

Additional details were also found available on minor changes made in the Lincoln chassis recently. This car now carries a Gemmer "Marles" type steering gear, with both worm and roller mounted on roller bearings. The net effect has been to increase the steering ease and thus make possible a reduction in ratio. Locked to locked position of the front wheels formerly required four and three-quarter turns, this having been reduced to three and one-half turns with the new gear.



Radiator design and horizontal louvers are features of the Marmon-Roosevelt shown at Chicago for the first time

A new three-window four-door sedan has also been added to the Lincoln line. It is characterized by the appearance of lower overall height, achieved by lowering the line formed by the tops of the windows. At the same time, overall height remains as formerly, with the distance from the top of roof side panels to window tops increased. The driver's seat is adjustable. Window lift controls are of the gear and rack rather than the chain type. Rear quarters are of metal in place of leather. The price is $4,500.

Engineering Aspects of Foundry Practice

"RELATION of Foundry Practice to Engineering," by Donald Campbell, was the title of a paper presented at the annual meeting of the S.A.E. in Detroit last week. It dealt in general with the aspects of green sand molding practice and its relation to design. His foundry has supplied cylinder blocks for Chevrolet, Star and Pontiac, the latter still in production in large volume, so that they have had ample opportunity to test all phases of green sand for molding and cores. It is made plain that this process entails special equipment, involves certain essential features of design, and is applicable only to large volume production, and that for best results they have concentrated on the use of three-part flasks.

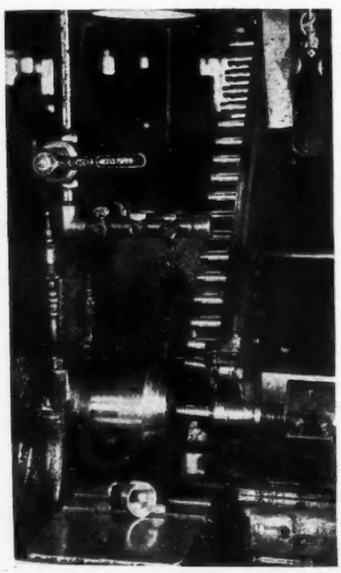
Among the advantages cited for the green sand process are the following: Better utilization of floor space; elimination of core drying; more sand salvage, and reduced weight of cores. In fact it is stated that the saving in weight of cores is about 110 lb. per casting on a certain type of block when green sand is substituted for dried cores. The saving in cost is said to be considerable, for on the Pontiac block they have shown a net saving of about $0.91 per casting, taking into account all items of expense.

Leroy V. Cram, in discussing the paper, said that the Chevrolet foundry differed with Mr. Campbell, as their experience is strongly in favor of dry sand cores. Alex Taub rose in support of green sand molding because it affords the designing engineer an opportunity of improving the structure of bearing supports. In his opinion the green sand process is attractive from the standpoint of design refinements and lower costs. L. V. Cram capitulated to some extent by noting that dry sand is making some inroads even in their foundry. He stressed the point that the use of green sand requires careful control because it is critical as to grain size and quality.

Automatic Magazine Attachment

CONSTANT application to the problems of the machine shop has resulted in some remarkable improvements in manufacturing methods. An outstanding example of this is found in a hand screw machine attachment developed and patented by Cadillac.

The hand screw machine is indispensable for certain operations, particularly those in finishing parts from the automatic screw machine line. As a rule these pieces are chucked individually by the operator and are generally treated as a hand finishing operation.



Automatic magazine arrangement for hand screw machine

The accompanying illustration shows the magazine rack, which is the central feature of the scheme. The problem is to drill a large tapering hole in the head of a stud.

Analyzing the cycle, we find the magazine in position to feed the stud into the chuck. At this point the tool advances, pushes the stud into the self-acting chuck and recedes. As the tool clears, the magazine is lifted out of the way. The tool feeds in slowly, completes the operation and again recedes. The final step finds the magazine coming down into position and when the trough at its lower end is in line with the spindle, the finished stud is ejected. The magazine again stops with another piece lined up and ready to feed into the chuck to start a new cycle. The cycle is full automatic.

Powerplants and Metal-Clad Ships Emphasized at *S. A. E. Meeting*

Relative safety of sea and landplanes, as well as the worth of air-cooled and water-cooled engines, were discussed at the Detroit session

AN engineering society Aeronautic Session without a paper on airplanes was the novelty offered at the Detroit annual meeting of the S.A.E. last week. Its two papers, by Ralph H. Upson, aeronautical engineer, and Commander E. E. Wilson, of the Standard Steel Propeller Co., dealt respectively with the Metal-clad Airship and the achievements in the way of aeronautic engine reliability, with emphasis on the air-cooled variety. The choice of speakers was a particularly fortunate one. Although neither is now associated directly with the problems under discussion, both men are well qualified to talk on their subjects, Mr. Upson having been the major factor in the development of the metal-clad ZMC-2, and Commander Wilson, while with the Navy Department, having had a tremendous influence on the development of the air-cooled radial engine.

As a result, in spite of the good attendance, but little controversial matter came out directly in the discussion. The argument of air-cooled versus water-cooled powerplants, which is bound to come up at any discussion on engines, of course, made its appearance. Harold Caminez, of the aircraft engine division, Cadillac Motor Car Co., maintained that the high reliability with air-cooled engines in the Naval Air Service, cited by Commander Wilson, was largely due to the low loading of these ships, and that the results obtained were therefore not applicable to commercial service.

A discussion also arose as to the relative safety of seaplanes and landplanes, one side claiming that the seaplane has more numerous landing facilities, thus enabling a reduction in dependence on engine reliability, and the other side taking the attitude that this might be true, but that while landing fields if smooth today are smooth tomorrow, the same is not true of water. There the matter rested, as it properly should.

Highlights in Commander Wilson's paper, which was presented by E. P. Warner, president-elect of the society, were the emphasis on increased reliability obtained through the adoption of direct, in place of indirect, cooling; the simplification in the location of accessories on radial engines, and the elimination of camshaft failures, all of which, according to the author, were formerly prominent causes of engine failure with Vee and In-line type of water-cooled engines. Regarding the use of multiple engine installations, Commander Wilson again emphasized the necessity of having such ships able to fly with one engine completely out of commission.

Commander E. E. Wilson, of the Standard Steel Propeller Co.

"Where do we go from here?" was the keynote of Mr. Upson's paper. That a large metal-clad airship cannot be based directly on the design of the ZMC-2 was one of the most important of the conclusions demonstrated, but the fundamental principles, according to the author, can be applied to larger sizes, with modifications in actual application of these principles, resulting in a ship of greatly increased efficiency. Mr. Upson's preliminary computations for a ship of this type are shown in the right-hand column of the accompanying table, the center column representing the results arrived at if a similar ship were based in design directly on the ZMC-2. In addition to the necessary changes in design involved, Mr. Upson also stated that improved methods of construction would have to be developed to make the larger metal-clad economically available. The material cost itself, he stated, is lower than that for a fabric-covered type of rigid airship.

C. B. Fritsche, Detroit Aircraft Corp., who presided at the meeting, closed it with a plea for more governmental financial assistance and cooperation with lighter-than-air ship manufacturers. Mr. Fritsche also stated that a 100-ton metal-clad is now being laid out with 17 times the lift of the ZMC-2.

METAL-CLAD COMPUTATIONS

	ZMC-2	MC-54a	MC-54b
Volume (cu. ft.)	200,000	5,400,000	5,400,000
Hull surface (sq. ft.)	19,500	175,000	195,000
Length (ft.)	150	450	600
Diameter (ft.)	53	159	140
Skin thickness (av. in.)	.009	.065	.015
Maximum pressure*	4.0	12.0	3.0
Maximum speed (m.p.h.)	69	130	100
Total hp.	440	14,000	4,800**
Weights (lb.)			
Skin and seams	2,900	180,000	49,000***
Frame and ribs	14,000	30,000	55,000
Powerplant & connections	1,600	55,000	24,000
Cars and passages	1,100	10,000	20,000
Fins and controls	700	30,000	18,000
Internal diaphragms	800	7,000	13,000
Miscellaneous	300	2,000	4,000
Weight empty	8,800	314,000	183,000
Useful load****	4,800	53,000	184,000
Gross lift @ .068	13,600	367,000	367,000
Per cent useful gross	35%	14%	50%

*Difference: inside minus outside in inches of water at bottom of maximum section.
**For clean, efficient design.
***Including protective film (2000 lb.).
****Including tanks, radio and passenger accommodations.

Gross Weight Method of Rating of Problems Found *in Con*

Adoption as recommended practice of uniform loading space specifications is urged by Pierre Schon of General Motors Truck Co. at the Transportation Session of the S.A.E. at Detroit.

ADOPTION of an S.A.E. recommended practice covering load spaces of motor trucks was urged by Pierre Schon, General Motors Truck Co., in his paper on the trend of size and weight in the development of motor trucks, presented before the transportation session of the S.A.E. annual meeting in Detroit on Jan. 23. In addition, Mr. Schon discussed the advantages of the gross weight method of rating trucks and, in a careful analysis, showed the difficulties caused engineers, manufacturers and operators by conflicting regulations on size and weight in the different states. He also pointed out inconsistencies in the Hoover code and in the recommendations of the Motor Vehicle Conference Committee. His paper concluded with a survey of variations in taxes levied on truck operation in the different states and urged cooperative action to stem the rising tide of such taxes. An abstract of certain portions of his paper follows:

Body makers throughout the country are anxious to secure a greater standardization of the most important dimension involved, namely, the distance from the cab to the center line of the rear axle. If this dimension could be standardized, certain size bodies, which would be applicable to any make of truck, could be built up for stock in large quantities. At the present time this is impossible, as no one maker, aside from Ford and Chevrolet, has a sufficient volume on any one model to warrant body construction on this basis. From the operator's standpoint, this lack of uniformity is serious also, because the body often outlasts the chassis, and it may be impossible to transfer it to a new chassis of another make or even of the same make. It also is important from the truck manufacturer's standpoint, as it is not uncommon for him to have chassis of different capacities, but taking the same body length. But, due to variations in loading space dimensions, different bodies were necessary, resulting in an increase in inventory necessary to fill orders.

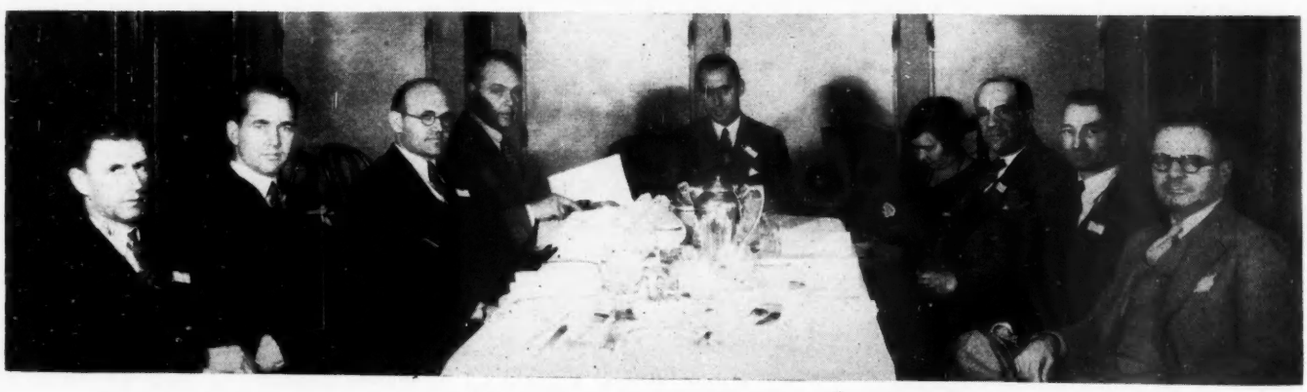
Already certain industries using trucks in large numbers are considering the adoption of loading space specification to meet their requirements. If this tendency becomes general, the result would be a large number of conflicting specifications, which would place the truck industry in a very difficult position. Hence, to forestall action by outside groups, Mr. Schon urged that the industry adopted a recommended practice of its own. To show the confusion existing at the present time he presented a table analyzing the models of six makers. The total number of bodies covered in this table was 107, and there were only ten duplications in this total. In other words, these 107 models had 97 different dimen-

TABLE I

Recommended Standard Load Spaces and Body Lengths

Standard Load Space, In.	Shorter Than Standard Extra-Short Body, Ft.	Standard Short Body, Ft.	Standard Body-Length, Ft.	Maximum Body-Length Allowed, Ft.
39	5	5½	6	6½
48	6½	7	7½	8
59	8	8½	9	9½
70	9½	10	10½	11
82	11	11½	12	13
99	13	14	15	16
115	16	17	18	19
135	19	20	21	22

Tolerance of ± 1 in. permissible.



The Meetings Committee of the Society of Automotive Engineers now includes (left to right) J. P. Stewart, Edward P. Warner, president of the Society, Joseph Geschelin, Coker F. Clarkson, Norman G. Shidle, Miss U. Delchamps, committee secretary, George McCain, Clarence Bruce and P. J. Kent

Motor Trucks Offered *as Solution* *flicting State* Regulations

By DON BLANCHARD
Editor, Automobile Trade Journal and Motor Age

sions for the distance from cab to center of rear axle.

In connection with frame widths, Mr. Schon was of the opinion that 34 in. would prove generally satisfactory. Wider spacing than this is not possible where dual pneumatics are used, as it is likely to make the overall width of the truck exceed the 96-in. limit in vogue in most states. A greater spacing is practical, however, with underslung rear springs.

The accompanying table (Table I) shows a recommended practice covering body lengths and the distance from cab to center line of rear axle proposed by Mr. Schon. He said that the entire range of practical body lengths from 5 to 22 ft. can be mounted on only eight standard load-space dimensions from the cab to center line of rear axle, and that this can be accomplished without running into any danger of abnormal load distribution. This table gives 25 different body lengths without a greater size variation than multiples of 6 in.

TABLE II
Practical Weight Regulations for Vehicles Equipped With Pneumatic Tires*

Maximum Weight	Highway Class A, Lb.	Class B, Lb.	Class C, Lb.	Class D, Lb.
Per axle if spaced more than 8 ft. apart	22,500	19,000	15,500	12,000
Per axle if spaced less than 8 ft. apart	17,000	14,000	11,000	8,000
Per in. width of tire	700	625	550	475

*Note a 20 per cent less weight per axle on *solid tires.*

These variations can be further split into differences of 1 in., making possible mounting of 100 different body lengths without abnormal load distribution. On the 48-in. load space, for instance, which is suitable for a 7½-ft. standard body, an 8-ft. body for hauling light, bulky materials can be mounted without throwing too much load beyond the rear axle. The same 48-in. load space can also be used for mounting a short body of 7-ft. length without disturbing the load distribution seriously. The same is true of a 6½-ft. body. A duplication exists in the extra short and long body lengths, making it possible to select the right chassis with proper load distribution to suit requirements.

In the future, should changing wheelbase dimensions for some reason or other be necessary, no good reason is apparent why the load space dimensions from the cab to the center line of the rear axle, or the width of the frame, if standardized along practical lines, should ever be subject to alterations. The need for standardization is felt throughout the entire industry and surely the time has arrived, Mr. Schon said, for the Standards Committee to take this matter up and establish a Recommended Practice.

Some of the recommendations of the Hoover code are inconsistent, Mr. Schon said. It provides for a maximum gross axle weight for the four-wheel truck of 25,600 lb., while the maximum allowable axle weight for a four-wheel trailer is 16,000. This difference seems to be difficult to justify. Another inconsistency is that a limit of 12,800 lb. is placed on axles spaced less than 8 ft. apart, whereas the limit on six-wheelers where the axle spacing does not exceed 54 in. is 16,000 lb. per axle.

The recommendations of the Motor Vehicle Conference Committee present even greater inconsistencies, in Mr. Schon's opinion. These recommendations for a maximum gross weight on one axle of 22,400 lb. for a four-wheel vehicle, but allow only 14,000 lb. per axle for a four-wheel trailer.

To correct these inconsistencies Mr. Schon advocated

The Sub-committee on Methods of Measuring Detonation, which met in Detroit during the annual meeting of the Society of Automotive Engineers last week, consisted of (left to right) J. O. Eisinger, H. K. Cummings, J. B. Hill, C. B. Veal, T. A. Boyd, Dr. H. C. Dickinson, Neill McGoull, Dr. Graham Edgar and A. W. Pope, Jr.

the adoption of weight restrictions based on Table II. The separate provision for axle spacings of more than and less than 8 ft. is made to prevent undue concentration of load on bridges.

In connection with the gross weight method of rating, Mr. Schon urged its advantages from the standpoint of controlling overloading of both the chassis and the tires. Some difference of opinion developed in the discussion, M. C. Horine, of Mack Trucks, Inc., contending that the method of rating had little to do with controlling overloading, but that the real control was exercised by the pneumatic tires which would not operate economically if overloaded. The almost universal use of pneumatic tires is going to put a final stop to overloading, as the increase in tire costs makes excess load uneconomical.

Committees were appointed at this session to nominate the vice-presidents for Transportation and Maintenance Activities and for Motor Truck and Motor Coach Activities respectively. The former consists of Don Blanchard, editor of AUTOMOBILE TRADE JOURNAL AND MOTOR AGE; Pierre Schon, General Motors Truck; H. V. Middleworth, Consolidated Gas Co., New York, and E. W. Templin, of Chrysler, with T. L. Preble, of Brockway, and A. J. Scaife, of White, alternates. The latter consists of G. A. Green, General Motors Truck; A. F. Masury, Mack; C. F. Magoffin, Reo Motor Car Co., and B. B. Bachman, Autocar, with F. Jehle, White Motor Co., and C. A. Pierce, Diamond T, as alternates.

Riding Not Closely Related to Muscular Fatigue

A PRELIMINARY report on research into fatigue produced by automobile riding was presented to the S.A.E. last week in Detroit by Dr. F. A. Moss, George Washington University.

Dr. Moss faced the problem of measuring or evaluating fatigue. Accordingly, the problem was divided into two parts: One, a measurement of body changes which occur in muscular fatigue; the other, tests of nerve fatigue. Physiological tests of muscular fatigue were conducted, the method of producing muscular fatigue being accomplished by riding a bicycle ergometer, shown in Fig. 1. The work done is measured electrically while the speed was measured by an electric counter. At the conclusion of each test, readings were taken of blood pressure, metabolic rate, carbon-dioxide combining power of the blood and a number of other technical blood tests. Readings were also taken on an electrocardiograph. The composite results of one of these tests are shown in Fig. 2.

A comparison of the physiological results obtained in the riding experiment with those obtained in the first study of muscular fatigue, showed the investigators that riding fatigue is not very closely related to muscular fatigue and suggested that measurement of nerve fatigue might give better results. The second series of tests, therefore, concern themselves with the development of a technique for measuring nerve fatigue. The first step in the study of these tests was to establish "normals" for each subject, the object being to give the subject sufficient practice on each performance so as to eliminate any possibility of bettering his performance, due to acquiring more facility. Road tests of the measurement of nerve fatigue consisted in their applications after periods of automobile driving.

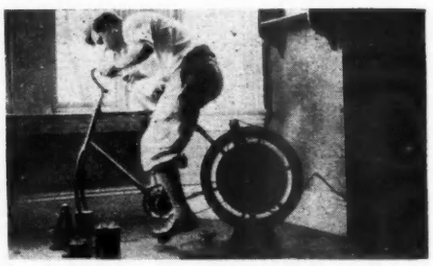


Fig. 1 — Riding the bicycle ergometer

Among the tests used were the following:

Number Checking: Consisting of a measurement of speed and accuracy in crossing out given numbers on a sheet of paper within a unit of time.

Steadiness: Wherein the individual was required to trace through a narrow groove with a stylus, without touching the edges, every contact with the edge causing an electrical contact which was recorded.

Speed of Reaction: This is a test of speed of movement in tapping a telegraphic key so arranged that each tap is registered on an electric counter. Mental Multiplication: Equilibrium tests which was a measurement of the subject's ability to balance his heels for one minute on the "wabble-meter," and Basal Metabolism. The results of these tests is shown in Fig. 3.

Dr. Moss concludes his paper with the following summary of results to date:

"1. Fatigue which accompanies riding in automobiles is very largely nerve, rather than muscular, fatigue.

"2. Muscular fatigue is fairly satisfactorily indicated in the decrease of carbon-dioxide combining power of the blood and in increased metabolism.

"3. Blood pressure shows a typical rise at first in muscular fatigue, then a fall as exhaustion sets in.

"4. The most promising measures of nerve fatigue which accompanies automobile riding are tests of equilibrium, mental multiplication, speed of reaction, number checking, and metabolism. These are being further investigated."

Fig 2 (below)— Physiological changes produced by marked muscular fatigue after riding bicycle ergometer

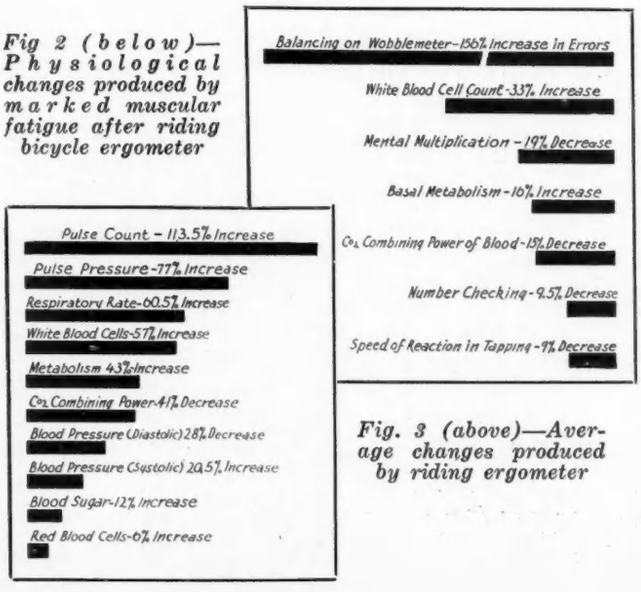

Balancing on Wobblemeter-156% Increase in Errors
White Blood Cell Count-33% Increase
Mental Multiplication -19% Decrease
Basal Metabolism-16% Increase
Co2 Combining Power of Blood-15% Decrease
Number Checking-9.5% Decrease
Speed of Reaction in Tapping-9% Decrease
Pulse Count - 113.5% Increase
Pulse Pressure-77% Increase
Respiratory Rate-60.5% Increase
White Blood Cells-57% Increase
Metabolism 43% Increase
Co2 Combining Power-41% Decrease
Blood Pressure (Diastolic) 28% Decrease
Blood Pressure (Systolic) 20.5% Increase
Blood Sugar-12% Increase
Red Blood Cells-6% Increase

Fig. 3 (above)—Average changes produced by riding ergometer

Pressure Feed Gasoline System Recommended for Aircraft

Vapor lock, knock tests and fuel volatility are discussed at length at the Cooperative Research session of the S. A. E. in Detroit

THREE papers were presented at the Cooperative Research Session, of the S.A.E. annual meeting, all by members of the Bureau of Standards. O. C. Bridgeman discussed The Properties of Gasoline With Reference to Vapor Lock. The second paper, entitled "Influence of Atmospheric Conditions on Knock Test," was presented by Donald B. Brooks, while C. S. Bruce discussed the Effect of Engine Design and Fuel Volatility on Acceleration Characteristics.

In his paper, Mr. Bridgeman arrived at the following conclusions:

1—It is undesirable to use a fuel which has a much lower ten per cent ASTM point than that required for easy starting at lowest temperature likely to be encountered. This may make it desirable to use different grades of gasoline for certain types of operating conditions.

2—The temperature of the liquid fuel should not exceed the ten per cent point temperature of the gasoline.

3—The presence of more than small amounts of propane in the gasoline is undesirable from the standpoint of vapor lock.

One of the major topics in the lengthy discussion which followed this paper was the relative desirability of controlling the temperatures in the fuel system or designing a fuel system which will be largely independent of temperature conditions. Pressure feed from the gas tank as against a vacuum feed was one recommendation, especially for aircraft. Another was to place the vacuum tank or fuel pump outside the hood in a cooler place.

An interesting comment made was that more trouble with vapor lock was experienced abroad than in this country, due to the more volatile fuels used. This naturally led to a suggestion that cars built for export be provided with simpler type carburetors. It was generally admitted that a simplification of the passages in carburetors would be highly desirable from a vapor lock point of view. Regarding the general use of two grades of fuel, a low volatility gasoline for summer and a highly volatile fuel for winter starting conditions, Mr. Bridgeman reiterated that if the fuel system temperature can be kept low enough it would be possible to operate with but a single fuel.

Mr. Brooks in his paper, which included numerous graphs of test results, clearly indicated that there was a decided influence on the results of anti-knock tests occasioned by changes in atmospheric conditions.

With respect to humidity, Mr. Brooks demonstrated that this atmospheric characteristic did not affect the relative anti-knock values obtained, in comparison with "standard fuels," but that the absolute anti-knock value was quite seriously affected. This seems to indicate that water vapor has a distinctly anti-knock characteristic, since in the Bureau of Standards tests increased humidity permitted an increase in the dry air charge with resultant increase in power and with approximately the same detonation.

Variations in air temperature from day to day, according to Mr. Brooks' tests, indicated that there was a wide difference in how this variation affected the anti-knock characteristics of fuels of differing compositions. The conclusion to be drawn from Mr. Brooks' paper definitely was that all comparative anti-knock rating tests would have to be carried out under standard atmospheric conditions or evaluated for each specific fuel to some standard atmospheric conditions.

It would appear from the discussion of this paper that there was practically no characteristic, either atmospheric or related to design or condition of the test engine, which did not vitally affect the anti-knock results obtained. Spark plugs in their effect on detonation, came in for a considerable amount of discussion, there evidently being a quite marked difference of opinion as to the relation of incipient preignition and detonation.

From Mr. Bruce's paper it would appear that fuel volatility has a rather more marked effect on engine acceleration than is generally appreciated. In a series of tests with three types of fuel ranging from commercial motor gasoline to aviation gas, on several types of engines and manifolds, it was generally found that the more volatile aviation fuel provided better acceleration at the lower engine speeds, whereas the heavier commercial fuels gave better results at the higher speeds. Some of this, however, may have been due in a large proportion to the fact that the engine setting provided the leanest mixture for maximum power with commercial fuel, which probably resulted in an over-rich condition with the aviation fuels at the higher speeds.

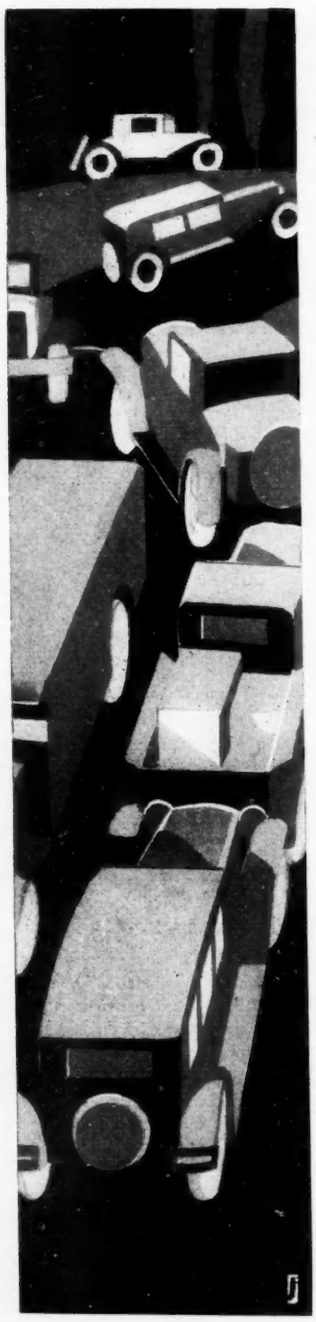
Variation in Structure and Mater Viewed in *the Light of*

Possibility of the conventional frame potential influence of airplane design discussed at

By ATHEL F.

WHAT will be the body of the future, from a structural point of view?

Will it be all steel, of aluminum, fabric, or composite?



Will it form an integral part of the chassis lending rigidity to, and deriving strength from the frame?

Will it be a shell, fairly flexibly attached to the frame so as to be independent of frame distortion? Or will the future body displace the frame entirely?

Will the airplane have an effect on its structural design, as through the use of tubing?

Each of these types and variation was discussed, some briefly, and some at length, at the body conference session of the S.A.E. at Detroit last week. It is natural, with the general standardization of body design in this country, that the more radical departures from what we accept as conventional design came from two European speakers on the program, E. C. Gordon England, of Gordon England, Ltd., British body manufacturers, whose paper was entitled "Body Mounting," and Thomas L. Hibbard, of Hibbard & Darrin, of Paris, French body designers and builders. American body builders were represented on the official program by Dr. George L. Kelley, of the Edward G. Budd Mfg. Co., with a paper on "Sheet Steel and the All-Steel Body."

Following a summary of European and American body design differences, Mr. Hibbard described the light weight type of body his company is building. In it aluminum alloy castings are widely used, along with aluminum sheet. Castings are even being experimented with for roof side panels, according to Mr. Hibbard. The author further emphasized the necessity for more research on new materials and construction methods for automobile bodies. One suggestion was that the advent of the front-drive car might well mean the practical elimination of the chassis frame. Another suggestion related to the use of cork for body and even roof center panels, the outside of course being cellulosed. The advantages of this material were stated to be: light weight, easy working in sheets, and good appearance when cellulosed, the latter of course also offering a weather proofing. Mr. Hibbard suggested also that something might be borrowed from the airplane fuselage, by using tubular structural members, largely in tension, to give lightness with strength.

In response to a question during the discussion, Mr. Hibbard stated that due to small number of bodies built by his company in comparison with American scales of production, comparative cost figures could hardly be obtained. He did state, however, that his company is able to build the aluminum alloy type of body, with its castings, cheaper than the composite wood and steel type.

Starting from the premise that the chassis is a flexible and elastic base on which to mount the body, Mr. England in his paper stated that those attempting a solution to meet the premise should be divided into three categories:

First — Those who claim that the superstructure should be equally flexible.

Second—Those who believe that the superstructure should be so strong and rigid as to make the chassis rigid in consequence of its attachment to the body.

Third—Those who seek a solution through the introduction of some form of insulation between the two components.

As exemplifying the first category, Mr. England cited the efforts of C. T. Weymann with their flexible structures rigidly attached to the chassis at several points. The necessity of using a flexible covering with the flexible structure, however, is seen by the author as a logical cost and perhaps appearance objection to widespread adoption for large scale American production.

In the second category Mr. England classifies the "oldest school of body engineers and builders." In this class he also finds the all-steel body, especially the Budd type. His major objections to this type of body are that it involves a sacrifice in lightness, that due to strains imposed upon it by the chassis it is subject to vibration,

ial for Use in *Automobile Bodies* *Recent European* Trends

being eliminated entirely and the fuselage construction on future S.A.E. body conference.

DENHAM

that the hollow structure causes resonance, and that the "setting-up" cost, unless reduced materially, makes it impractical for all except high production manufacturers considering frequent style changes.

In the third category belong, according to Mr. England, the Daimler type with the body mounted on a subframe attached at six points to the main frame, the Lanchester development of a special cast body sill of aluminum mounted on several rubber buffers on the chassis, and similar other developments of these types. His major objection here was high cost. Mr. England's own type of body design, which he next described, would probably fall into the latter category. It consists of a light weight aluminum shell, mounted at three points on the chassis, with limited articulation, to provide a floating type of unstressed design. The hood and dash are kept free from the cowl, and attached to the chassis, in conjunction with the radiator. Similarly the body floor and seats are also attached to the frame directly.

For the body shell Mr. England recommended aluminum, believing that the reduction in weight, and possible reduction, therefore, in chassis weight, would more than offset the higher cost of this material.

Later during the discussion Mr. England stated that the normal relative movement of the body shell with respect to the chassis would not average more than ⅛ to 3/16 in., with a maximum of ¼ in. This was in answer to a question regarding the effect on passengers in contact with the shell of such relative motion. Mr. England further explained that in his body design the front fender and running board are attached to the chassis and not connected to the rear fender.

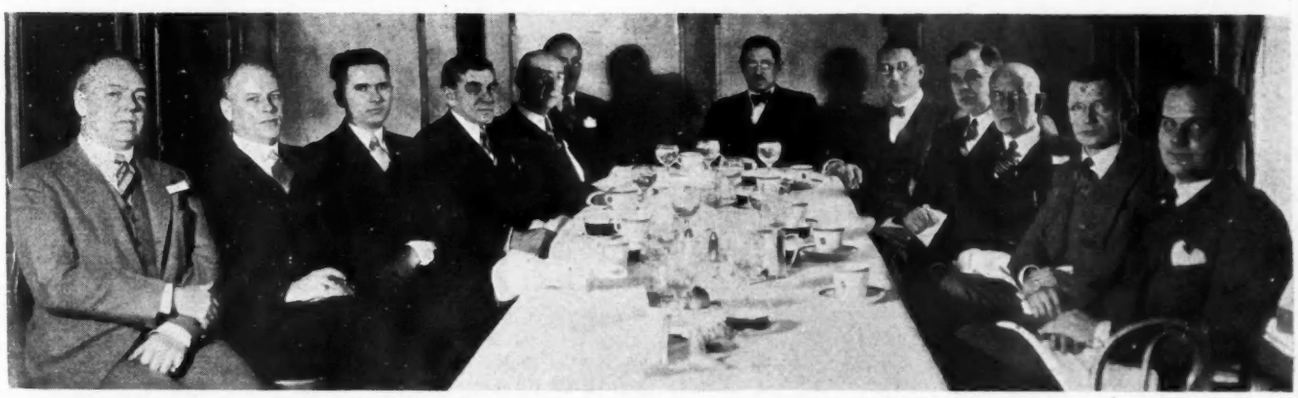
One suggestion made during the discussion was to obviate all the troubles occasioned by the flexibility of the chassis in normal types of design by making the chassis itself more rigid.

Dr. Kelley, in prefacing his description of structural details of the Budd body, credited the possibility of its development very largely to improvements in the manufacture of strip and sheet steel and the possibility of obtaining the latter in larger sheets with fairly uniform grain thickness. Improvement in materials has been responsible for a solution of the drawing problems.

According to Dr. Kelley, experience has indicated that the most significant manufacturing specification is the degree of elongation. For the most difficult draws, he stated, an elongation of more than 25 per cent on a sample of 8 in. gage length and ¾ in. width, both longitudinally and tranversely, is required. To this he added, that even if these conditions are met in all three cases, strip, normalized sheet and box-annealed sheet could not be promiscuously substituted for each other, each requiring different pressure adjustment and, with sharp formations, different radii.

Rockwell hardness tests, he believes, may be useful on strip, but of doubtful value on other types. He also doubts the value of cup tests, especially on box-annealed steel. X-ray diffraction photographs, Dr. Kelley stated, may be useful, except for the danger that the small area sampled may not give a reliable indication. Regarding future improvement in sheet steel, Dr. Kelley believes that research on grain size might prove of considerable value, both as to improving drawing quality and as to greater uniformity of drawing results. Such work, he believes, should be supplemented by further work on plastic flow and elastic recovery of materials.

Following Dr. Kelley's paper, two reels of film were shown, illustrating the methods of manufacturing Budd bodies and tests on a car carrying one of these bodies.



The Passenger Car Body Activity Committee of the S.A.E. in session at Detroit. The group includes (left to right) Coker F. Clarkson, E. G. Simpson, R. S. Grimshaw, A. J. Neerken, J. Hammerl, C. B. Whittelsey, Jr., W. N. Davis, H. R. Crecelius, C. B. Parsons, W. H. Emond, A. A. Cripps and L. Clayton Hill

Fuel Economy and Distribution When Heat is *Applied* at

Alex Taub of the Chevrolet Motor based upon air consumption Ricardo. Subject brings

MIXTURE DISTRIBUTION," dealing with a critical analysis of air-fuel mixture behavior, manifolding and other factors, as presented by Alex Taub, Chevrolet Motor Co., was divided into two parts, one a study of distribution routine, the other a study of the distribution system. This paper was given at the mixture distribution session of the Detroit annual meeting of the S.A.E. last week.

In distribution routine Mr. Taub proposes the use of efficiencies based upon air consumption after the precedent set by Ricardo. He next develops the fishhook curve, which is a characteristic curve plotted with specific fuel consumption as ordinates and fuel consumption based on leanest mixture for maximum power as abcissae. "The procedure in determining a fishhook curve," says Mr. Taub, "is as follows:

"Let us lean the carburetor down to the point where the engine runs irregularly and then enrich the mixture slightly to obtain a condition that is barely steady enough to permit a reading of fuel and load. We shall then be at the leanest point of operation at which a reading can be taken. Progressive readings should be taken by steps to approximately two points past the maximum power point. With this information we can plot a combination curve, as shown in Fig. 1, that incorporates graphs of specific fuel consumption and beam load against pounds of fuel per hour.

"Three points on these curves are worthy of consideration. They are *a*, the ideal economy point, which is the one selected by the engineer as representing a desirable operating economy; *b*, the ideal power point, which is the complementary point for power that should be available with the selected economy, and *c*, the maximum economy point. Theoretically, point *b* should be the leanest for maximum power. However, if we study the characteristics of the power fishhook, we note that a very gradual change occurs between *d* and *e*. By studying the economy fishhook, we find that a rapid change occurs between *c* and *f*."

The maximum economy point *c* is the significant point in studying distribution, for it is a stable value and is extremly sensitive to changes in distribution. This is illustrated in a specific case by a series of full - load fishhooks showing the difference in results produced by using another type of manifold.

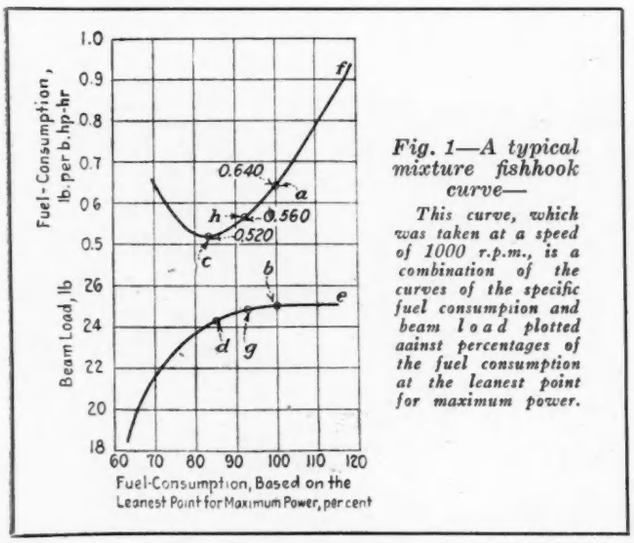


Fig. 1—A typical mixture fishhook curve—

This curve, which was taken at a speed of 1000 r.p.m., is a combination of the curves of the specific fuel consumption and beam load plotted aainst percentages of the fuel consumption at the leanest point for maximum power.

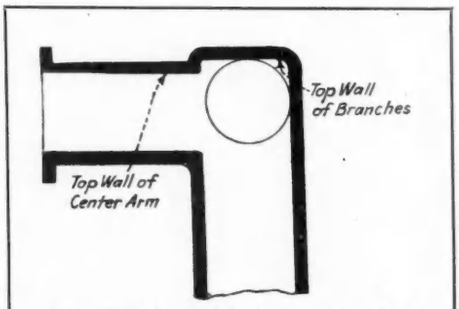


Fig. 2—Manifold design in which the intersection of the branch with the main manifold is higher than the intersection of the center port—

This condition will feed a greater proportion of the wet ends to the branches than to the center port, this variation in the height of intersection serving as a means of calibrating the distribution between branches.

"Fishhook curves can be used to check mixture setting," the author observes, "for very often we have found point *a*, when checked against a standard setting, to be at *c*, and although the economy is similar for points *a* and *c*, with the setting at *c* the operation is ragged and sensitive. A report is frequently sent in that the conditions are critical because further leaning shows less economy. With the setting at *a*, we are more likely to have a strong job, without critical carburetion. If the economy is unsatisfactory, the engineer may have to correct the distribution so that the carburetor man can select a strong point with improved economy."

Source of heat seems to affect fuel economy. And his conclusion is that fuel economy and distribution are best when heat is applied at the *T* of the manifold and not by preheating air ahead of the throttle. This section of the paper closes with the suggestion that quantitative progress may be measured by comparing mixture fishhooks. These tell how much the error is, while a common sense deduction based on experience will tell where to look for the trouble.

Found to Be *Improved* "*T*" of *Manifold*

Co. proposes the use of efficiencies after the precedent set by out active discussion.

Alex Taub, Chevrolet Motor Co., whose paper was a feature of the Mixture Distribution session of the S.A.E. annual meeting in Detroit

In the second part of the paper, the author examines the vagaries of the induction system starting with the carburetor. With the exception of varying degrees of atomization of certain functional conditions depending upon its design, the carburetor is almost completely exonerated as a distinct factor in distribution. It is noted, however, that distribution is sensitive to the throttle valve position, i. e., the throttle shaft must be parallel to or at right angles to the crankshaft as required.

"The airstream division," suggests the author, "is worthy of much study. It is affected by the varying length of arms due to friction, the number of bends or turns it travels, the type of bend and the velocity of the air. It is essential that the airstream should be balanced before any other correction be attempted. The air balance can be checked with varying degrees of exactness, from comparative compression-pressures to actual air-flow in the manifold."

"Again," Mr. Taub points out, "consideration should be given to the manifold size in conjunction with valve size, cam timing and engine range. A maximum velocity through the pipes is needed for good low-end performance and the driest manifold. The greater the velocity is, the more wet fuel is picked up by the air in motion. An excellent practice would be to have a valve capacity that would give a high-speed range in excess of that desired and then limit the top range to the point required by decreasing the manifold area. In this way the restriction is in the pipe, which is as it should be. This condition gives a certain amount of leeway in balancing the air-flow."

In discussing air balance and the handling of wet fuel the author attacks the problem of accurate division of wet fuel at the *T* and suggests a construction such as shown in Fig. 2, as a means of feeding the greater proportion of wet ends to the branches. He then discusses various types of manifold designs and the effectiveness of sharp corners in minimizing the tendency for fuel to flow to the inside wall. The effect of a rebound wall and the use of port inserts is shown in Fig. 3. The paper concludes with the thought that the data presented will stimulate further study of distribution problems.

In the discussion which followed, some information developed regarding investigation at the University of Arkansas. Their results show that economy is seriously affected by distribution. They have found that economy is improved by turning the carburetor air horn toward the engine block and confirm the fact that throttle position has an important effect on distribution. At the University of Arkansas they have experimented with a manifold similar to that shown in Fig. 2, except that all sections were square. Excellent results were obtained by using an intake riser suggested by Jacklin, namely, one having circular projections cast on the inside.

C. S. Kegerreis suggested dividing the problem into

The Production Activity Committee of the S.A.E. held its first meeting in Detroit last week during the Society's annual meeting. In the group above are (left to right): F. W. Stein, W. W. Nichols, Joseph Geschelin, A. R. Fors, Coker F. Clarkson, R. S. Burnett and John Younger

three logical parts, air distribution, design of the system, and heat application. To improve air distribution he recommended increasing valve areas and intake passage areas. Another interesting thought was the possible effect of the exhaust manifold. He too approved the idea of apply heat at the *T* and advanced a further thought that thinner riser walls should be employed.

A prepared discussion by R. N. Janeway dealt with the development by the Automotive Devices Co. of a new type of manifold vaporizer designed to solve the distribution problem. As described by Mr. Janeway, "The metal cone in the manifold riser is internally heated by exhaust gas and is externally wound with a braided metal wire. The liquid fuel is trapped by the highly absorbent winding and is vaporized by contact with the hot surface of the cone, at the same time preventing the winding from attaining an excessive temperature and thereby avoiding unnecessary heating of the air. This device thus provides a dry mixture by concentrating the application of heat on the fuel and consequently makes possible perfect distribution without sacrifice of volumetric efficiency by excessive mixture temperature."

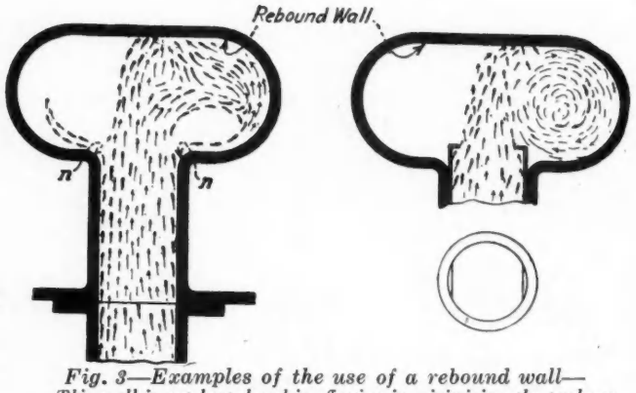


Fig. 3—Examples of the use of a rebound wall—This wall is not heated and is effective in minimizing the tendency of the wet fuel to flow to the inside wall. The corners at n are seldom sharp enough to be effective in discouraging wet fuel from following around the wall. Use of a port insert, such as that shown in the view at the right, forces the wet fuel back into the airstream and permits the corner to be rounded sufficiently to permit a better air-flow

The fishhook method proposed by Mr. Taub showed considerable economy on tests with the fuel converter. In fact, the fishhook at 1000 r.p.m. obtained from tests of a six-cylinder engine agreed closely with the ideal fishhook of a single-cylinder engine. Mr. Janeway commented favorably on the utility of the fishhook in analytical work such as is involved in studying a new device and its effect upon economy and distribution.

Proposes Cold Induction System

"COLD CARBURETION," presented by Carl H. Kindl, Delco Products Corp., stood out in almost startling contrast to the present studies of distribution problems, preheating of the air-fuel mixture and the other kindred problems confronting designers. He proposes to use a cold induction system where even the atomization of the fuel is disposed of by feeding liquid fuel directly to the valve ports. Their efforts have been concentrated on valve-in-head engines because this valve construction seems to lend itself ideally.

The outstanding advantages of cold carburetion are quick starting and driveaway in cold weather and an appreciable increase in power from the same displacement. The cold mixture reduces detonation, thereby permitting a wider range of spark advance.

Briefly, cold carburetion is accomplished by means of a special carburetor hooked up with a special intake manifold shown diagrammatically in Fig. 1. Liquid fuel is carried in individual, flat-shaped tubes, connected to independent orifices in the carburetor and leading directly to the valve ports.

Fig. 2 shows the functional details of the carburetor. As shown, air is brought in independently and does not mix with the fuel until both air and fuel reach the valve pocket. A small volume of air is permitted to enter the primary tubes so as to assist the flow. Incidentally, this small amount of air is all that goes through under closed throttle conditions. Experiments with glass manifolds and a neon-tube stroboscope show clearly that during the suction stroke, air and fuel rush to the open port but no flow is apparent at open throttle when the port is closed. Stabilized air flow for quick acceleration is assured by the automatic valve operating against a dashpot which introduces a lag in the air passage when the throttle is opened quickly. At high speed this lag is of such short duration that it cannot be measured, nevertheless it is sufficient to prevent the jerk usually experienced upon kicking open the accelerator. Cold carburetion is not yet available commercially but experimental results are encouraging.

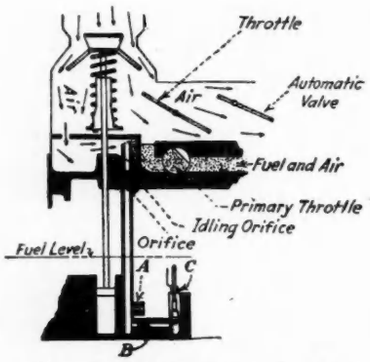


Fig. 2—Details of carburetor A part-throttle orifice, A, in the main tube from the fuel bowl, has a slight control of the fuel-flow. Orifice B controls the power mixture. Needle C is for open-throttle operation

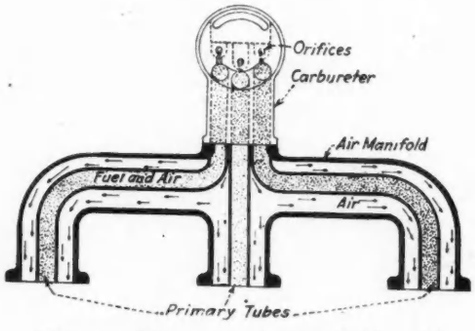


Fig. 1—Diagram of manifold with carburetor attached Throttles are placed in both the air and the fuel manifold, referred to respectively as the main and the primary manifolds

Location of Carburetor Main Jets In Down-Draft *Types Discussed*

Paper by E. H. Shepard, read at the engine session of the S.A.E. Annual Meeting, advocates placing venturi below level of fuel in float chamber, with controlled flow.

WHETHER the main jet should be located above or below the float chamber fuel level in down-draft carburetors, and whether purely mathematical considerations are of practical value in determining crankshaft bearing frictional coefficients, were the topics receiving the major share of the discussion at the Engine Session of the S.A.E. annual meeting in Detroit last week. They came as a result of two papers, one on Downdraft Carburetion, presented for E. H. Shepard, of the Holley Carburetor Co., by T. J. Litle, and the other on high-pressure bearing research, prepared by Louis Illmer, Brewer-Titchener Corp.

On the frictional coefficient question the majority seemed to be on the side of those taking the attitude that the equations evolved by Dr. Illmer for computing the effect of the various variables were too lengthy and cumbersome to be of practical value when the limitation of the equations are taken into account. Certainly, the discussion resulted in adding a number of further variables resulting from practical design considerations, without which it was claimed the results obtained through the use of the equations were of little value.

The effect of the papers and discussion of the previous session, on Mixture Distribution, was particularly noticeable at this session also, following the presentation of Mr. Shepard's paper on Downdraft Carburetion in general, and the Holley carburetor in general. It was generally conceded that the design of a manifold for use with downdraft carburetors, in which the heat jacket is replaced by a hot spot to vaporize the liquid fuel dropping into it, is particularly effective by enabling an increase of volumetric efficiency.

Tracing the recent adoption of downdraft carburetors on several automobiles to the widespread adoption of this type of carburetor in the marine field, Mr. Shepard distinguished the Holley unit from those at present in use on automobiles by referring to the latter as inverted updraft types.

Differing from conventional practice, the Holley carburetor, as described by Mr. Shepard, has the jet with its venturi located below the level of the fuel in the float chamber, so that fuel flow is through a combination of gravity and suction effects, as shown diagrammatically in Fig. 1. The fuel feed to this jet is controlled by a needle valve operated from the throttle valve shaft. A secondary orifice, needle-valve controlled also, and connected to the choke valve, is provided for cold starting conditions, as will be noted.

With the jet below the fuel level, a diaphragm shown at *b* is provided to shut off the fuel supply and prevent leakage when the engine is stopped. This diaphragm is operated by engine oil pressure, the valve closing when the pressure falls below a certain point, given as 10 lb. in the paper. For cold weather starting, when there is no oil pressure readily obtainable, the shut-off valve is also connected to the choke valve.

In the discussion it was further brought out that carburetors of this general type without venturi, with a lower jet and longer needle valve, have been used also in marine engine practice. To a suggestion that together with downdraft carburetors and manifolds, inlet ports also be of the downward flow type, Richard M. Mock replied that this, though seeming to eliminate the problem of the liquid fuel in the manifold, actually made conditions worse. In support of his argument, he stated that the flow of liquid, rather than of a steady character, was of a wavy nature, so that the proportion of fuel charge taken in by the cylinders would vary. Dr. Mock emphasized further that downdraft carburetion did not overcome the need for vaporization.

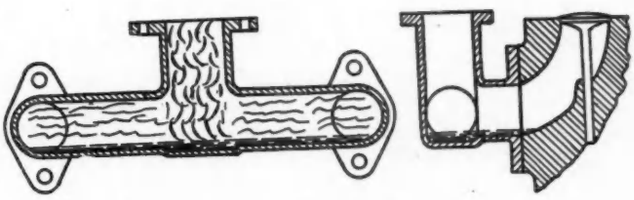


Fig. 2—Large-diameter manifold for downdraft carburetor
When starting a cold engine, liquid fuel collects at the bottom, but a large space transmits an atomized charge from the carburetor to the inlet valve. The atomized fuel does not have to bubble up through liquid fuel, as with an updraft carburetor

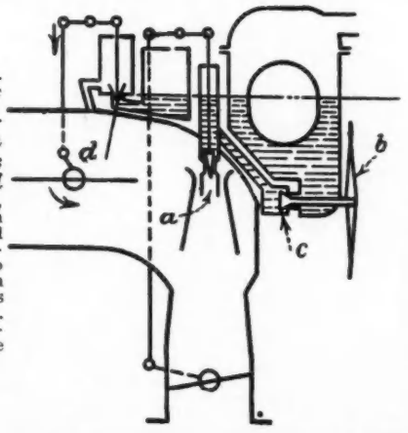


Fig. 1—Diagrammatic sketch of downdraft carburetor in which nozzle outlet is below fuel level
a, nozzle outlet; b, metal diaphragm controlled by oil pressure from engine; c, valve to stop fuel flow when oil pressure drops below 10 lb. per sq. in.; d, needle connected with choke for starting cold

Here and There About the

By Norman

French Lick Selected—

THE 1930 Summer Meeting of the S.A.E. is going to be at French Lick Springs. The council made its final announcement early in the week and its decision was greeted favorably even by most of those who had been rooting for a Cook's tour into the wilds of Canada.

Certainly the selection of French Lick would seem to make this year's gathering a sure-fire success from almost every angle. Everybody can be accommodated under one roof; adequate and attractive facilities for meetings are close to golf, tennis and other sport facilities so that both the serious and recreational side of the meeting really can be taken in readily.

And French Lick certainly meets every golfing need. Its main course with something like 98 sand traps provides a test of skill for the best of our engineering golfers, while its level, untrapped short course makes it unnecessary for anybody to return home without a good score in his pocket to tell his friends about.

What better could be asked?

* * *

Bigger and Better Meetings—

THE national meetings committee, incidentally, is going to try to get plans for all national meetings under way earlier than has been the custom in the past so that meetings will be assured of turning out like this year's George White Scandals—"Bigger and Better than Ever."

In addition to the regular annual and semi-annual meetings of the society, there are distinct evidences of more intense activity this year on the part of each of the special professional activities.

The aeronautic crowd is planning more meetings than ever before and is keeping the society definitely in pace with the development of this new form of transportation. Two one-day national production meetings are planned, one to be held in Detroit and one in some other city yet to be chosen.

The possibilities and practicability of several sectional meetings under national auspices are being considered by the transportation group.

* * *

The Past-Presidents Present—

A GOOD representation of former presidents of the society attended the annual meeting this year. Four of them were present, namely, David Beecroft, H. L. Horning, B. B. Bachman and W. R. Strickland. Strickland and Horning each presided at one of the technical sessions.

* * *

The Car-Owner's Problems—

AROUND this meeting, as always where automotive engineers of every description are gathered together, it was interesting to get informal and conflicting viewpoints of the relative importance of various automotive engineering problems.

"It seems to me," one engineer said, for example, "that engineering discussions—as indicated by circulating about this meeting at any rate—may be in danger of delving too deeply into certain problems which at the moment aren't giving much real trouble from a car owner standpoint, while putting too little emphasis on others concerned with items about which the average car owner still kicks pretty regularly.

"We have been doing a tremendous lot of detailed, constructive work in connection with fuels, carburetion, manifolding and the like," he continued, "and it is now possible to gather together in a meeting a large number of men, all of whom know a lot about the details of these problems. We seem to have got to the point where really hair-splitting discussions are possible. While some may decry such hair-splitting arguments, the possibility of their taking place in itself manifests the existence of much knowledge.

"Undoubtedly much remains to be done along these lines and further research is desirable and necessary, but I wonder if the average car owner today isn't kicking more about some features of design that have nothing to do with fuel, than he is about those things which have?"

* * *

Hair-Splitting and Fundamentals—

WE don't know the answer to that question. Certainly it would appear to be true that no such hair-splitting discussions can take place

S. A. E. Annual Meeting

G. Shidle

today in regard to many body design and construction features, riding qualities and chassis elements as are possible in the fuel and allied fields because of the extensive *and widespread* research which has been taking place in this latter category.

Some engineering features, the performance of which still seems unsatisfactory to the average car owner in a number of instances, seem yet to be in the realm of opinion to a large extent among engineers as regards even basic principles.

* * *

Technical Personnel—

THAT great mass of factory employees who, when laid end to end, make up the employment increase and decrease curves, is not the only group which is subject to sudden and unexpected dismissals in the automotive industry. Engineers and technicians, as well as other kinds of professional and office workers, are subjected to the same fluctuations; perhaps even to more violent ones from a psychological standpoint because, on the average, they are less prepared for them.

An automotive manufacturer who seeks to build up a better engineering force than he ever had before is faced today with a great opportunity to do just that very thing. Plenty of able, aggressive, experienced automotive engineers are looking for jobs. The far-seeing manufacturer who is looking ahead more than a few months has a golden opportunity to build for himself quickly and at reasonable cost the best technical department he ever has had.

(And if we can be of help to any manufacturer along these lines, we will be more than glad to assist.)

* * *

1931 Nominations—

THE nominating committee, working on nominations of officers and councilors for the year 1931, had several active secret sessions and is said to have come very close already to completing its work, the results of which probably will not be announced until the time of the Summer Meeting.

With no first vice-president in existence this year for the first time, due to the constitution change, the nominating committee probably had more real scope for discussion and debate concerning the presidential nomination than ever before.

Bigger Engines for Trucks—

"THERE are really more engineering reasons for eight-cylinder powerplants in trucks than in passenger cars," the chief engineer of a big truck company remarked the other day. We asked him if he thought there would be an eight-cylinder development in the truck field. He said "Yes." And he added the belief that the truck of the future would probably have a much lower body than has the present one, although admitting the influence of existing loading platform heights as a serious deterrent to such a development.

* * *

Better Product From Kicks—

AND talking about truck design, we had one of the biggest operators in the country tell us the other day that he didn't think there had been any material progress in truck design for a long while. Naturally, he modified that blunt statement considerably in the subsequent discussion.

His remark, however, carried us back to the remarks made a few days before by an important truck engineer anent "unreasonable" kicks from operators who insisted on asking a given truck to do jobs for which it never had been designed in the first place.

"Unreasonable kicks irritate us temporarily, of course," he said. "But just between ourselves, I want to tell you it's a good thing these demands are made. After all, they are the things which really force engineering development. Our product has been made better by reason of them. We now make trucks which perform, for the same price, tasks which five years ago I would have considered unreasonable. All power to the operator who kicks, I say."

Progress in truck design has been made. And the presence of men in high positions who think as does the engineer just quoted insures us continuance of that progress, as we see it.

Front-Wheel Drive Developments Followed Closely *by Engineers*

Attitude of executives changed from generalized opposition to a more logical disagreement on technical details of the change from conventional design.

IT was extremely interesting to one who has attended a number of front-drive technical sessions of engineering societies during the past few years, to observe the changing attitude of the average engineer toward this departure from conventionalized design. Scoffers, of course, we will have always with us, but at least in the case of the front drive their attitude seems to have changed from that of a generalized opposition to the more logical disagreement about the advantages and disadvantages of front-wheel-drive details and their specific effect.

Thus it was found that not a single chief engineer representing a major automobile company who was called on by T. J. Litle, chairman of the session during the discussion at the S.A.E. annual meeting last week, would put himself on record as not following, at least fairly closely, developments in the front-drive passenger car field.

While the discussion itself was the highlight of the session, its stimulation was to a large extent due to the two papers presented. The first paper, dealing with the mechanical or chassis aspects of the front drive was presented by William Muller of New Era Motors. Supplementing this information, Joseph Ledwinka of the Edward G. Budd Mfg. Co. discussed front-drive bodies.

In addition to discussing the general features and advantages inherent and claimed for the front-drive car, Mr. Muller in his paper gave a number of details regarding the design and construction of the Ruxton. One interesting detail mentioned was that his company found that best steering results were obtained with driveshaft universals to one side or the other of the center line of the steering spindle, resulting in the eliminating of a dead feel to the steering mechanism and "wandering."

Regarding the effect of grades on the tractive effort of front drives, Mr. Muller stated that 15 per cent grade shifted the center of gravity in his car backward about 4 in., equivalent to about 3 per cent of the wheelbase. Load distribution in the Ruxton is 2125 lb. on the front and 1875 lb. on the rear axle, according to Mr. Muller.

In calling on W. T. Fishleigh of the Ford Motor Co. to discuss Mr. Muller's paper, Mr. Litle referred to current rumors that Ford was intending to enter the front-drive field. While not committing himself on the subject, Mr. Fishleigh stated that he thought that no wide-awake company can afford not to consider the front-drive car as a possibility.

William J. Muller, of the New Era Motors Co., designer of the Ruxton, whose paper on front-drive design was presented at the S.A.E. annual meeting in Detroit

R. C. Hoffman, consulting engineer, who is now building two experimental front-drive cars, stated that he believed the main problem in front drives was to get the powerplant well forward, so as to increase tractive effort and provide more body room without extension in wheelbase. Mr. Hoffman said he did not regard the front drive as inherently superior to the rear drive merely on the basis of its being driven through the front wheels, but rather due to certain commercial, design, and other advantages which the front drive in itself can bring. Regarding cost, he said that if front drives are to be based on rear drive production and design methods as at present, their productive cost is bound to be higher, but that, with modifications in design and new methods of production, it should be possible to bring the cost down to less than that of the comparable rear-drive automobile.

Herbert Snow, chief engineer of the Auburn Automobile Co., believed that the outstanding advantage of the front drive was its roadability and that this characteristic was not entirely due, as is frequently assumed, to the low center of gravity obtainable. Relating to the geometry of the front end, Mr. Snow said that they had found a distinct difference in king pin angularity required by front-wheel drives as compared with rear-drive front axles. In the latter it is customary to have a castor of around 1½ to 2 deg. In the front drive a vertical position has proved most effective in providing steering ease, while even negative castors of from ½ to 1 deg. have been used. He stated that even with the king pin vertical in both planes there seemed to be a natural tendency of the front-drive car to right itself after turns.

That not enough makes of cars of front-drive design are available yet to permit of definite conclusions without being influenced by specific considerations of individual types, was the opinion of John H. Hunt, General Motors Corp. Mr. Hunt said further that he believed that the problem of front or rear drives would boil down to whether it will be possible to give the public more for its dollar.

Mr. Hunt also believed that some of the advantages of the front drive are in danger of working to its advantage. To illustrate his point he said that with a rear-drive car he

could now drive around a curve faster than he could safely apply his brakes. With a front drive, the higher speeds on curves might lead into even more trouble.

The subject of excessive front tire wear, which has been talked of in connection with front-drive cars, was introduced by Herbert Chase of *American Machinist.* In discussing this point, J. M. Hale of Firestone Tire & Rubber Co. recalled that the advent of the balloon tire decreased, in the rear-drive car, the wear on the rear tires, but increased wear at the front. Toe-in and camber recommendations helped to reduce this front tire wear again. He wondered, therefore, whether front end geometry in the front-drive might not have quite a little to do with tire wear also.

Mr. Hale also warned the industry that they might expect rather general disappointment on the part of car owners on the subject of tire wear during the coming year, due to the overpowering of cars, which effort of course has to be transmitted through the tires to the road. A small mistake in geometry of the front end, in addition to this excess power, may mean quite serious tire wearing conditions, Mr. Hale believed.

Other points brought out and statements made during this discussion included the following:

1. In the design of front-drive cars, vision is an important consideration to be kept in mind.
2. Front-drive cars can be operated with one flat front tire without serious interference with steering qualities.
3. That little trouble has been experienced in front drives with respect to shimmy.

An important point scored for the front-drive car body by Mr. Ledwinka in his paper was that they permitted greater seat cushion depth by dropping the seat pan to the level of the lower frame flange. Mr. Ledwinka stated that he believed Vee type engines would assist the front-drive body designer materially, as the present hood length involves extremely careful consideration of leg room due to wheelbase limitations considered desirable.

As in the body session of the previous day, the suggestion was again made during the discussion that the conventional chassis frame might possibly be eliminated or at least incorporated in the body design.

The effect of front drive design on the transmission of chassis noises to the interior of bodies also came in for quite a little discussion. Mr. Ledwinka expressed himself of the opinion that the elimination of the driving axle and transmission from below the body has reduced noise in the rear compartment, but that the natural tendency was to increase the amount of noise in the front compartment, especially in view of the fact that the cowl and dash act similar to a loudspeaker horn. Another suggestion of a cause for the increased noise in the front compartment was that sound travels down wind, and is therefore directed against the body rather than away from it.

Thomas J. Litle, Jr., consulting engineer, who presided at the front-drive session of the S.A.E. annual meeting

To a suggestion by Herbert Chase that hoods be lowered to afford better frontal vision, especially for shorter people, Prof. H. M. Jacklin of Purdue University replied that this would be quite difficult in view of the limitations already existing on radiator frontal areas, due to interference of the front axle below the core. R. I. Schonitzer of the Auburn Automobile Co. stated, in this connection, that the Cord angle of vision compared favorably with a number of rear-drive cars on which investigations were made. Mr. Schonitzer added that they had experienced no difficulty with cooling.

Cemented Tungsten Carbide Practice

A. K. BRUMBAUGH, White Motor Co., initiated a symposium on cemented tungsten carbide practice by his introductory talk on "Tungsten Carbide Steel in Production" at the S.A.E. meeting in Detroit. Howard Jones cited experiences at the White Motor Co. From this he generalized that cemented tungsten carbide tools are excellent for non-ferrous metal parts, particularly aluminum, bronze and the like. It does not give uniformly good results on steel, although it seems to be satisfactory on cast iron. The most satisfactory application is on piston production where they have produced an output of 50,000 pistons without appreciable wear on the tool. In general their cemented tungsten carbide tools give 25 to 50 times the life of high-speed-steel tools for the same job. These tools show to best advantage on intermittent cuts and on their piston grooving tools. They have also begun to use reamers and spot facers with cemented tungsten carbide cutting edges. In their experience they find that in using these tools, speed may be greatly increased, but the feed must be reduced below the accepted practice for high-speed-steel.

W. G. Robbins, Carboloy Company, Inc., contributed some really usable and informative material to the discussion. After briefly sketching the development and character of the material, he drew attention to the importance of the right kind of mounting. Copper brazing is apparently the only satisfactory means of cementing at present, as it gives a permanent but elastic bond. He warned against heating to high temperatures, as 1700 deg. F. is critical and oxidation will take place. If heating at high temperature is attempted it should take place in an atmosphere of hydrogen.

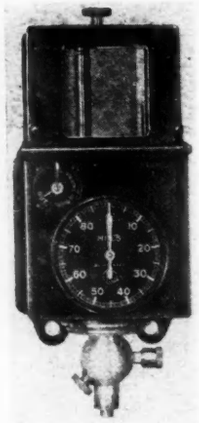
Grinding wheels of suitable character are now available but grinding is successful only when taking an extremely fine cut. According to Mr. Robbins, cemented tungsten carbide tools will prove to be a boon to the foundry and manufacturers of drop forgings because these tools will readily cut scale and hard spots.

NEW DEVELOPMENTS—Automotive

Hasler Tel Recorder

AN acceleration and deceleration recorder has been developed by the Hasler firm of Berne, Switzerland, and will be distributed in this country by R. W. Cramer & Co., 136 Liberty Street, New York, N. Y., who also handle the Hasler Tel speedometer.

The Tel acceleration and deceleration recorder is based on the principle of time-distance, speed integration. A shaft in gear with clockwork turns at constant speed and therefore measures time. Another shaft driven from the driving mechanism of the vehicle measures distance. Integration of these two measurements is accomplished through a system of three cams on the time-measuring shaft and three clutches on the distance-measuring shaft, through conjugating levers actuated by the cams to engage and disengage the clutches through successive seconds. These cams serve to span time units of one second each, during which the time shaft and the distance shaft are conjugated, the resultant integrated speed being measured by the deflection of one of three measuring wheels which carries along in its movement a stirrup under spring tension. The movement of this stirrup is transmitted to the indicating pointer, and by means of gears and a toothed rack to the recording scriber arm.



Hasler Tel acceleration and deceleration recorder

In order to secure speed measurement and speed indication during every second of movement, use is made of three complete mechanisms composed of a cam, clutch and conjugating lever each, whose cycles of operation start at intervals of one second. The stirrup is common to all three sets.

A copy of the chart obtained, on a reduced scale, is reproduced herewith. The paper is fed through the instrument at a speed proportional to the speed of the vehicle, 1 mm. for every 2 ft. traveled. The vertical height from the base line of the chart to the maximum speed of 90 m.p.h. being 60 mm., each millimeter of rise of the speed line represents 1.5 m.p.h. To facilitate reading the speed, the chart is ruled horizontally.

The punctures made at the top and bottom of the chart by the teeth on the paper-feed roller are 3 mm. apart and represent 6 ft. traveled. The double punctures at the top of the chart occurring every 60 mm., represent 120 ft. of distance and serve to facilitate the reading of distance on long charts.

The recording scriber is tipped with a hard point which marks into the paper as it moves along. The scriber point is permanent and requires no attention. The instrument is geared to 1000 revolutions of its driving spindle for every mile covered by the vehicle. Also, it records speed whether the vehicle is moving forward or backward. A handy lever is provided above the dial on the left-hand side, which enables the operator to throw the paper-feed mechanism in and out of engagement at will at any time.

The instrument weighs 10 lb. and measures 12 in. in length, 5 in. in width and 4½ in. in depth. It can be operated by the speedometer flexible driveshaft.

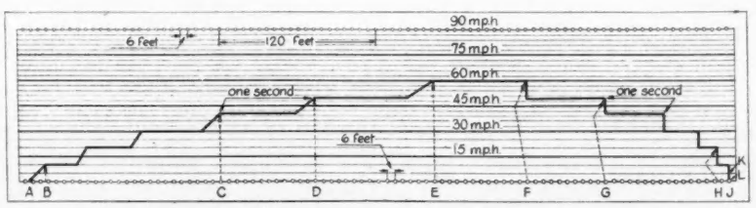
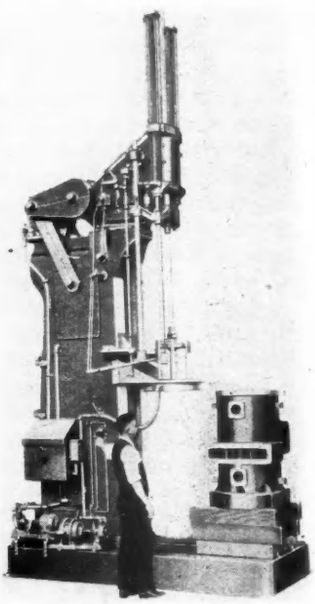


Chart obtained from Hasler recorder (reduced scale)

Heavy Duty Honing Machine

CYLINDERS up to 20 in. in diameter and 54 in. in length for Diesel engines, air compressors and oil and gas engines now can be finished on the No. 3620 heavy duty vertical honing machine just announced by the Barnes Drill Co., Rockford, Ill. This machine has a 3-in. 10-splined spindle, hydraulically reciprocated. Eight quick-change spindle speeds are available, and the length of stroke may be set for just the right amount of overrun of the hone at each end of the cylinder. According to the manufacturer, large-diameter cylinders, if reamed to within 0.005 in. to 0.008 in. of their finished size, may be honed to an accuracy of 0.001 in. Power is supplied by a WE oilgear pump, driven by a 20-hp. motor at 1200 r.p.m. The dimensions of the machine are: Height, 18¾ ft.; size of table, 30 in x 30 in.; floor space, 58 in. x 117 in. The approximate net weight is 12,000 lb.



Barnes heavy duty honing machine

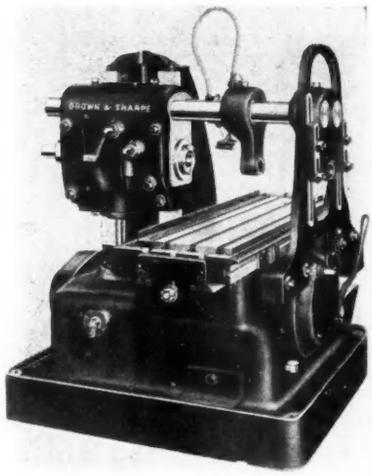
Plain Milling Machine

COMPLETE redesign of the No. 13B plain milling machine is announced by the Brown & Sharpe Mfg. Co., Providence, R. I. The feed ranges and capacity dimensions are nearly the same as those of the previous machine, having a longitudinal feed of 34 in.; transverse adjustment of the spindle 4 in.; vertical adjustment of the spindle 12 in.

The top of the table is 32 in. above the floor, which is said to be the usual conveyor height. The position of the driving pulley at right angles to the table permits batteries of these machines to be driven by one line shaft, using a minimum of floor space. The table is wide and thick, and its entire top is

Parts, Accessories and Production Tools

finished. Feed is by a revolving nut mounted on a large diameter stationary screw. The overarms are of the double type. The outer brace can be left attached to the bed of the machine at all times, if desired. The arbor yokes, cutters and arbor can be removed without disturing the outer brace.



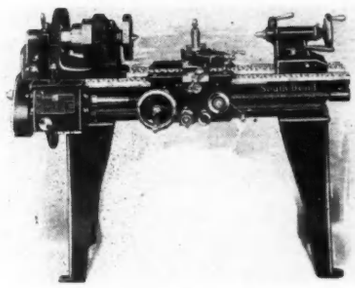
B. & S. No. 13B plain milling machine

Power enters the machine through a self-adjusting multiple dry-disk clutch. The drive is entirely through splined shafts and gears with anti-friction bearings used extensively throughout.

This machine can be operated with entirely automatic table functions when desired. And by means of adjustable dogs a variety of operating cycles can be obtained. One control lever operates all power movements of the table.

Nine-Inch South Bend Lathe

THE new 9-in. lathe has just been introduced by the South Bend Lathe Works, South Bend, Ind. Like the lighter models of their 9-in. lathes, this machine is a back-geared screw-cutting precision tool. Its design, however, makes the new lathe a distinctly different machine. Its principal improvement is an entirely new headstock of the same style and design as was recently adopted on the large-size toolroom lathes. This headstock has a three-step cone 1¼ in. wide which delivers 25 per cent more power than the earlier models. Another change is the provision of a new back gear shaft oiling system.

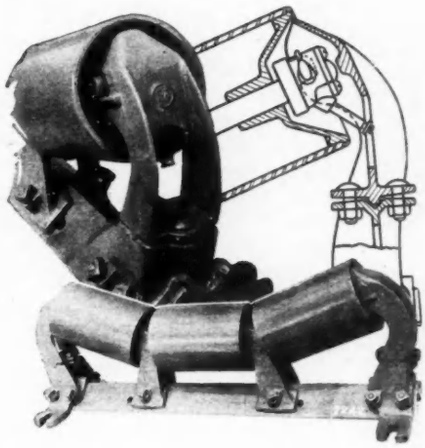


Nine-inch South Bend lathe

Better oiling of spindle bearings is also provided, and the spindle carries a new seal that prevents accumulation of oil on the outside of the headstock. Gear guards, which strengthen the headlock casting, and a new means of securing the headstock to the lathe bed, are said to insure permanence of alignment, thus adapting this machine to the manufacturing plant, tool room, machine shop, service shop, and engineering laboratory. The 9-in. lathe is available in several styles and sizes, with countershaft or motor drive.

Improved S-A Carriers

THE Stephens-Adamson Mfg. Co. of Aurora, Ill., have made several important changes in both their "Sacon" and "444" belt conveyor carriers. In the accompanying illustration of the Sacon carrier, the pulley and bracket are shown in a section drawing, with details of the bearing arrangement.



Sacon improved carrier for belt conveyors

Both styles now have closely spaced pulleys of steel tubing with self-cleaning malleable iron pulley ends which are said to prevent accumulation of dirt or moisture. The live shaft principle, in which each shaft turns with its pulley, has been retained, but new bearings have been designed and each shaft rotates in two double Timken bearings housed in a new type oscillating housing. Improved grease seals for each bearing are said to retain the lubricant better and make it virtually impossible for grit or moisture to enter. The carrier mountings (cross angle for the Sacon and cross shafts for the 444) are the same except that a new hood type end support gives additional protection to the outer bearing.

Grinding and Buffing Machine

DESIGNED for general light purpose work, the No. 10A Little Giant pneumatic grinding and buffing machine recently announced by the Chicago Pneumatic Tool Co., New York, N. Y., is especially adapted for smoothing flush head rivets, and beveling and polishing marble and granite. It is now equipped with the closed type pistol grip throttle handle but can be supplied with the straight type throttle handle if desired. The general specifications are as follows: Wheel capacity 4 by ¾ in.; speed, light, 4400 r.p.m.; length overall 16½ in.; net weight 8¼ lb.

No. 10A Little Giant pneumatic grinding and buffing machine

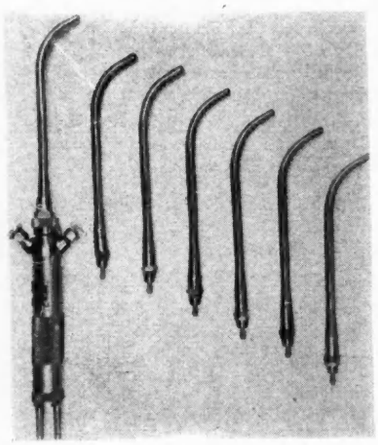
Automatic Tapping Machine

Garvin automatic tapping machine

TAPPING 1 in. to 1¾ in. U.S.S. thread in cast iron and 1 in. to 1½ in. U.S.S. thread in steel is made available with the new 3B Garvin automatic tapping machine recently placed on the market by the Western Machine Tool Works, Holland, Mich. This machine is fully automatic as the top is arranged to enter to a predetermined depth, reverse, and automatically recede. Depth is controlled by a trip which may be adjusted to close limits, thus providing safety in tapping blind holes. A four-speed selective transmission arranged for motor drive provides direct shifting from one speed to another and makes available spindle speeds of 56 to 149 r.p.m. with a 1200 r.p.m. motor, and 84 to 224 r.p.m. with an 1800 r.p.m. motor. This machine is said to have ample capacity for single or multiple spindle work.

Aircraft Welding Blowpipe

AIRCRAFT fuselage welding is said to be expedited by the use of the Oxweld Type W-15 blowpipe made by the Linde Air Products Co., 30 E. Forty-second St., New York, N. Y. The welding heads, seven in number, are equipped with drawn copper tips which are curved to reach "hard to get at" places. Oxygen and acetylene hose lines are connected directly to the blowpipe, the usual screwed hose connection being dispensed with.

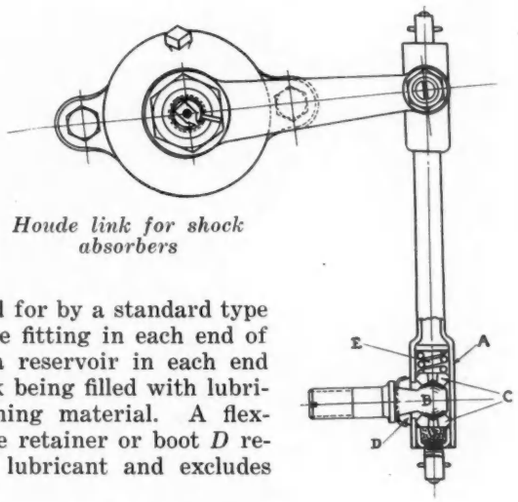


Oxweld fuselage welding blowpipe

Shock Absorber Drag-Link

THE Houde Engineering Corp., Buffalo, N. Y., manufacturer of Houdaille hydraulic double-acting shock absorbers, has developed and patented a new type of drag-link assembly for use with its shock absorbers.

The link proper is in one piece, enlarged at the ends to accommodate the parts as shown in the cutaway section *A*. The stud has a hardened and ground ball *B* which seats on two phosphor bronze buttons *C*, with a groove in the face for their lubrication. The chrome-vanadium spring *E* automatically takes up wear at the bearing surfaces and keeps the joint quiet. Lubrication

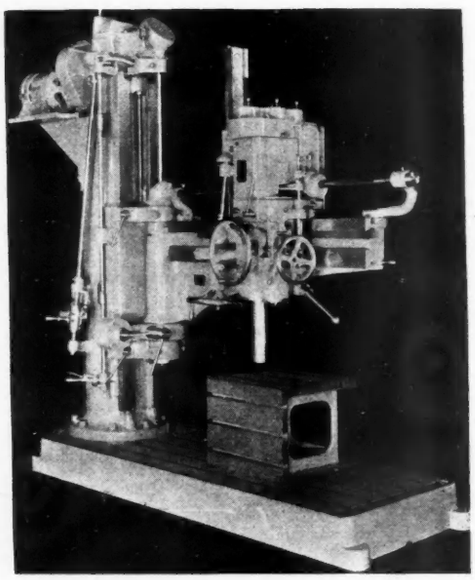


Houde link for shock absorbers

is provided for by a standard type of pressure fitting in each end of the link, a reservoir in each end of the link being filled with lubricant-retaining material. A flexible grease retainer or boot *D* retains the lubricant and excludes dirt.

Heavy Duty Radial Drill

SIXTEEN spindle speeds and six feeds are available on the new line of low hung drive radial drills recently announced by the Western Machine Tool Works, Holland, Mich. Among the features of these machines



Western low hung drive radial drill

are: an automatic stop elevating mechanism; low hung drive; friction feed release, and one lever spindle control. Belt drive, Texrope drive and direct connected geared motor drive can be provided. The range in sizes is in seven steps from 3 ft. to 8 ft. Motor size ranges from 5 hp. to 15 hp. at 1200 r.p.m. constant speed and 450 to 1800 r.p.m. variable speed. Floor space is 31 x 85 in. for the small size and 45 x 163 in. for the largest size.

IN a recent Air Corps Information Circular (No. 642) it is pointed out that while we continue to raise the requirements in aircraft design strength calculations, we continue to be troubled with fluttering tails, wings and ailerons, and vibrating engine mounts. It appears therefore that to preclude these faults our strength requirements should be supplemented by rigidity requirements.

First with the News

Reliable, Accurate

News of the Industry

PAGE 171 VOLUME 62 *Philadelphia, Saturday, February 1, 1930* NUMBER 5

Optimism Prevails as Output Gains

Factory Executives Confident With Retail Sales Proving Satisfactory

PHILADELPHIA, Feb. 1—A continuation of the general feeling of optimism as to the sales outlook for the automobile industry and a further slight upward tendency in the trend of production, considering the factories of the United States and Canada as a whole, have been noted in the automotive world during the past several days.

With the season of automobile shows and national dealers' conventions well under way, close observation by factory executives has revealed the retail demand is proving stronger than many anticipated during the latter part of 1929. Public interest in the 1930 automobiles, which was precipitated at the New York automobile show, is continuing keen and has shown undiminished strength in the exhibits that have followed.

The level of aggregate output this month has been somewhat below that of the same period last year, a fact that is being met with favor by experts in automobile production and merchandising. It is indicated that the trend will continue gradually upward as the greater selling season approaches.

Hupp 11 Mos. Earnings

DETROIT, Jan. 28—Hupp Motor Car Corp. reports for 11 months ended November 30, 1929, net income of $3,407,967 after depreciation and federal taxes equivalent to $2.31 a share (par $10) on 1,471,260 shares of common stock. Consolidated income account for 11 months ended November 30, 1929, follows: Net sales $51,576,071; cost of sales $48,700,960; operating income $2,875,111; other income $1,423,234; total income $4,298,345; depreciation $469,168; federal taxes $421,210; net income $3,407,967.

Plan Castor Oil Supply

WASHINGTON, Jan. 28—With the purpose of providing a domestic supply of castor oil necessary to airplane motors, the Italian Ministry of Aeronautics is sponsoring a company which has been organized to finance the cultivation of castor beans.

Eight-Cylinder Cars Continue to Gain

SOUTH BEND, Jan. 29—Continued increase in the percentage of 8-cylinder cars registered during the first 10 months of 1929, has been accompanied by a steady drop in the percentage of sixes in the field above $1,000, according to a compilation made by The Studebaker Corporation. Total registrations of sixes above $1,000 for the first 10 months of 1929 in 43 states amounted to 494,797 compared with 601,961 for 1928, a decrease of 18 per cent. But eights increased to 138,015 compared with 85,352 for the same period of 1928, an increase of 62 per cent.

Prepare Tariff Protest

PARIS, Jan. 21—Members of the American automotive industry are now preparing a statement to be presented to the French Tariff Commission regarding the two bills changing duties from the present 45 per cent ad valorem basis to a specific basis.

Two deputations will wait on the Tariff Commission, one representing French interests, and comprising the importers of such parts as Lycoming engine, Gordon-Wymann crankshafts, Thomson valves, Warner transmissions, Spicer universals, etc., and the other putting forward the viewpoint of importers of complete cars, among them being such firms as General Motors, Chrysler, Packard, Graham-Paige, Hupmobile, etc.

Sparks Forms New Company

DETROIT, Jan. 30—Sparks Withington Co. of Jackson, Mich., has announced the formation of a new manufacturing concern, Sparton of Canada, Ltd., to be located in London, Ont. The corporation has a capitalization of 200,000 shares, no par value and will manufacture radios and automobile warning signals. Officers of the company are William Sparks, president, Harry G. and Clifford Sparks, vice-presidents, Leland Bisbee, secretary, and J. A. Esic, treasurer and manager. The corporation has purchased the plant of the Sherlock-Manning Piano Co. of London, Ont., where production will shortly be under way.

Dealers Are Told Factories Plan Aid

Reeves Cites Effort of Committee at N. A. D. A. Convention

CHICAGO, Jan. 29—A resolution urging car and truck manufacturers to eliminate fleet-buyers' discounts was adopted by the annual convention of the National Automobile Dealers Assn., held here Jan. 28 and 29. The convention was the largest in the history of the association and was characterized by frank discussion of factory dealer relationships.

Commenting on the N.A.D.A. program for putting the dealers' business on a sounder footing, Alfred Reeves of the National Automobile Chamber of Commerce said that the factory sales managers' committee to which this program was presented originally, was studying it and hopes to be able to hold a meeting shortly, at which an announcement would be made as to what might be done about these suggestions.

Clarence Eldridge, sales manager of the Reo Motor Car Co., feature speaker at the convention banquet, said that one more such glorious record-breaking year as 1929 and the dealers would be undone.

J. R. Histed, Hudson, Chicago, was elected president; Harter B. Hull, Dodge, Baltimore, first vice-president; George R. Wray, Ford, Shreveport, La., second vice-president, and F. W. A. Vesper, Buick, St. Louis, treasurer, of the association.

Road Bill Passes Senate

WASHINGTON, Jan. 29—The Senate yesterday passed a House bill to increase to $125,000,000 from $75,000,000 the Federal government annual appropriations for aiding construction of state highways. The increased appropriations will be available for the next three fiscal years, beginning with the present year, ending June 30.

Franklin Clips Road Record

SYRACUSE, Jan. 29—Powered by its new air-cooled airplane engine, a stock Franklin sedan, with Cannon Ball Baker behind the wheel, has broken all previous records over the 1451-mile route from New York City to Miami.

Men of the Industry and What They Are Doing

Durant Executives Honored

Frederick J. Haynes, president of Durant Motors, Inc., headed a group of executives of the company who were guests at a luncheon given by the civic bureau of the Chamber of Commerce of Lansing, Mich., for the purpose of welcoming the activities of the company to Lansing. Durant officials who attended the event, which was held at the Hotel Olds, included Ralph A. Vail, vice-president in charge of production; M. H. Kregar, factory manager at Lansing; R. A. Cole, chief engineer; B. Fowler, body superintendent; C. Reese, purchasing agent at Lansing; C. K. Edwards, purchasing agent at Toronto; F. B. Averill, factory manager at Toronto; H. C. McKaslin, of the Toronto engineering staff, and W. J. Allis, assistant to Mr. Vail.

Mott is Honored

C. S. Mott, vice-president of the General Motors Corp. and president of the Union Industrial Bank of Flint, Mich., has been honored in the organization of the Guardian Detroit Union Group, Inc. Mr. Mott has been made a member of both the advisory and executive committees of the Group. He also is a member of the trust investment committee of the Guardian Detroit Trust Company.

Morse Aids Beloit College

Charles H. Morse, former president and now chairman of the board of directors of Fairbanks, Morse & Co., manufacturing gasoline and oil engines, has made a gift of $100,000 to Beloit College at Beloit, Wis., seat of the main works of the Fairbanks, Morse company, for the construction of a new recitation building.

Bradley Joins Agency

Myles Bradley, a member of the General Motors Corp. staff for 20 years, and recently in charge of the Detroit publicity office, has been appointed a member of the staff of Beard & Ayres, Inc., Chicago, public relations counsel.

Hatch Joins Dyer Agency

Talbot C. Hatch, Chicago, has been appointed account executive in the industrial department of the Dyer-Enzinger Co., Inc., Milwaukee agency. Mr. Hatch formerly was assistant manager of the motor wheel division of the A. O. Smith Corp., Milwaukee.

Welch Changes Lines

Irving E. Welch is no longer connected with the Wilmington Fibre Specialty Co. He is now located at 810 Stephenson Bldg., Detroit, and represents the Paragon Die Casting Co., Chicago, Ill., which manufactures die castings to customers' specifications.

Graham is Advanced

TOLEDO, OHIO, Jan. 27—L. A. Miller, president of the Willys-Overland Co., today announced the election of George M. Graham as vice-president in charge of sales, in addition to his other duties. Mr. Graham has served as vice-president during the past two years and has been closely associated with President Miller in the management of the company.

Under Mr. Graham's direction, the sales department of the company will continue to function with Perry C. Gartley as Western sales manager, and Nelson A. Beardsley as Eastern sales manager, with their respective regional and district sales managers. Frank L. Wiethoff, assistant sales manager, will direct distribution of the company's products for both the Eastern and Western sales managers, in addition to the home office operations of the general sales department.

Loomis is Advanced

C. W. Churchill, general sales manager of Buick Motor Co., has announced the appointment of H. E. Loomis, manager of the Grand Rapids zone of Buick, as regional manager for Buick on the Pacific Coast, succeeding Peter S. Steenstrup, who has been promoted to an important assignment abroad with the General Motors Export Corp. Mr. Loomis will be succeeded as manager of the Grand Rapids zone by C. C. Edmonds, formerly assistant manager of that zone.

Eurich is Appointed

B. D. Adams, acting general sales manager of the Detroit Aircraft Corp., has announced the appointment of S. D. Eurich, as sales representative for the Eastman and Parks Aircraft divisions in the Detroit district. Eurich was formerly with the Fairchild Aircraft Corp. Mr. Adams has also announced the appointment of G. H. Anderson of London, Ontario, as Canadian sales representative for all divisions of the company.

Noll is Promoted

L. M. Simpson, general sales manager of the tire department of the United States Rubber Company, has announced the appointment of Page Noll as sales manager for tires, Central Region, with headquarters in Detroit. Mr. Noll has been connected with the United States Rubber Co. for the past 13 years. Prior to coming to Detroit, he was in charge of tire sales in the city of Los Angeles.

McDarby on Trip

N. E. McDarby, director of sales, Auburn Automobile Co., left this week for a six weeks' trip which will take him to the Pacific Coast and back.

Oakland Shifts Four

PONTIAC, Jan. 28—Great Lakes regional headquarters of the Oakland Motor Car Co. will be moved from Cleveland to Pontiac, Mich., about March 1, it is announced by W. R. Tracy, vice-president in charge of sales.

W. M. Chamberlain, former sales promotion manager for Oakland, has been appointed Great Lakes regional manager at Pontiac. L. J. Marsh, because of his wide acquaintance and extensive experience in the Cleveland territory where he has long served as Great Lakes regional manager, will remain there as manager of the Cleveland zone office.

I. W. Walls, former zone manager at Cleveland, will become acting manager of the Southeastern regional office at Atlanta during the illness of W. A. Sullivan.

H. H. Goodrich, associated with the Chevrolet Motor Co. during the last seven years, has been named sales promotion manager for Oakland. During his connection with Chevrolet, Mr. Goodrich was zone sales promotion manager, supervisor of used car operations in Detroit and city sales manager at Columbus, Ohio.

C. S. McElwain, who several months ago became acting advertising manager when W. E. Fellows became assistant general sales manager, has been appointed advertising manager.

Become Lee Directors

George S. Mahana, vice-president of the Corn Products Refining Co., and Robert I. Barr, vice-president of the Chase National Bank, have been elected directors of Lee Rubber & Tire Corp., to fill the vacancies caused by resignation of William B. Dunlop and through death of Samuel H. Miller. Other directors were reelected.

Johnson Made Sales Director

Carl W. Johnson has been appointed director of sales of the Cleveland Graphite Bronze Co., Cleveland, according to an announcement from the company.

Law is Advanced

William Law, sales engineer for the Pratt & Whitney Co., Hartford, has been appointed manager of the agency sales division of the company.

Van Ranst Joins Chrysler

C. W. Van Ranst, formerly chief engineer of the Cord division of Auburn, has joined the engineering staff of Chrysler Motors.

Norris is Reelected

W. K. Norris was reelected president of the McQuay-Norris Mfg. Co. at the annual stockholders' meeting held in St. Louis on Jan. 27.

Hudson Has $7.26 Per Share Earnings for Year 1929

DETROIT, Jan. 28—The Hudson Motor Car Co. in its annual report made public yesterday, has reported a net profit of $11,594,854 for the year ended December 31, 1929, after charges including federal taxes. This is equivalent to $7.26 a share on the 1,596,660 no par value shares outstanding, and compares with $13,457,363 or $8.43 a share in 1928. Net income for 1929 is $3,415,055, or more than 41 per cent in excess of the cash dividends paid during the year.

The annual balance sheet shows current assets of 4.17 times current liabilities, after unusually large expansion of manufacturing facilities and the development of the new Hudson and Essex models were paid for during the year out of the cash surplus.

William J. McAneeny, president and general manager, said in connection with the report to the stockholders:

"Since our last report to you, we have shipped a total of 300,783 automobiles.

"During the year we expended a portion of our cash surplus to increase body manufacturing facilities, to increase capacity for Hudson production and to introduce two new car designs. We believe these new cars will enable us to further strengthen our position in the industry.

"Our sales policies have kept in mind the welfare of dealers, with the result that the year ended with a dealer body which in the main is strong in finance, prestige and loyalty to the Company.

"Our position abroad has been further strengthened by the erection of an assembly plant in Brussels. This plant, together with those in London and Berlin, will enable the company to handle its export business at minimum cost, besides providing the operating flexibility quite essential in these markets. We continue to occupy first place among American passenger automobile exporters to the British Isles."

Rohrbach in Difficulties

PHILADELPHIA, Jan. 27—Financial difficulties of the Rohrbach concern, one of the leading German airplane producers, entered an acute stage when it was reported the firm had ceased to pay its workers 10 days ago. In view of impending organization of a United States Rohrbach Flying Boat Corp. and considering the orders which the French government granted the company on the German reparations account, it was expected the government would prevent closing of the Rohrbach plant, according to press reports from Berlin.

Stinson Expects Gain

DETROIT, Jan. 27—William A. Mara, vice-president of the Stinson Aircraft Corp., said today that increase in the company's production during 1930 will amount to 300 per cent. More than a million dollars in commitments have been let by the Stinson Company to cover the first three months of the program, Mr. Mara said.

Progress of Plants Reviewed by Graham

EVANSVILLE, IND., Jan. 27—The Graham sales organization has grown from 600 distributors and dealers to 2755 in the United States and foreign countries in the period of the two years the three Graham brothers have controlled the Paige interests, according to Joseph B. Graham, president of the Graham-Paige Motor Corp., on a visit here last week. Mr. Graham with J. D. Biggers, vice-president and manager of distribution, was here for inspection of the Graham-Paige Body Corp. plant, subsidiary interest.

Mr. Graham sounded a note of optimism on the business prospects of the automotive industry in 1930 with expression of his belief in a reasonable increase in sales volume over the year of 1929. Production at the local factory which will concentrate on building of Graham six-cylinder bodies will be increased gradually, he announced.

Reynolds Sells Issue

DETROIT, Jan. 28—Entire issues of 247,610 shares of additional common stock of Reynolds Spring Co. authorized to provide for purchase of Premier Cushion Spring Co. have been subscribed, taken up, underwritten and paid for in full. New stock was available to stockholders of record Oct. 31, 1929, at $4.50 per share on basis of one share for each two held. Subscription date was extended to Jan. 24, 1930, from Nov. 21, 1929. Combined Detroit and Jackson spring units of company are producing 16,000 constructions daily, Charles G. Munn, president, stated.

Moline Plans for Increase

CHICAGO, Jan. 28—Minneapolis-Moline Power Implement Co., according to W. C. MacFarlane, president and general manager, is starting its manufacturing program for 1930 earlier this year than has been customary in the past, and on larger scale operations, to take care of the demand which the company believes it will be called on to fill.

Plan Cheap Automobiles

PHILADELPHIA, Jan. 27—Minerva Fabrique Nationale and other Belgian automobile manufacturers are forming a new company with Dutch capital to build cheap 15 hp. cars at a price to compete with Fords and Chevrolets, according to press reports from The Hague.

Toledo Show to Open

TOLEDO, Jan. 27—The 22nd annual automobile show for Toledo, sponsored by the Toledo Automotive Trades Association, will be held in the new Civic Auditorium and Exposition hall on Feb. 3 to 8. Norman Jamieson is general chairman of the committee in charge.

Automotive Freight Costs Exceed Rail Dividends

NEW YORK, Jan. 31—The greatest annual revenue to the railroads from automotive carload freight is far in excess of the total amount paid in dividends on railroad stocks, according to figures submitted by J. S. Marvin, chairman of the Traffic Managers Conference of the National Automobile Chamber of Commerce, at a meeting in Detroit today of the chamber's special committee.

Shipments of vehicles, parts, tires, gasoline and oil, lumber, steel and related commodities employed in automobile manufacture and others, plus stone and gravel used for highway construction, total $542,170,000. Railroad dividends total $428,524,000. These shipments compare with a grand total for carload traffic of $4,317,698,024 and these constitute 12.6 per cent of the total. The motor industry is responsible for 28.7 per cent of the manufacturers of miscellaneous products shipped in carload lots.

French Tax Reduced

WASHINGTON, Jan. 29—The French luxury tax on automobiles has just been reduced from 12 to 10 per cent of the duty-paid value on passenger cars, and from 6 to 5 per cent of the duty-paid value on commercial vehicles used for transportation of freight as well as passengers, according to a report received at the Department of Commerce from Assistant Trade Commissioner H. C. Schuette, Paris. Trucks used solely for the transportation of freight will remain exempt from these taxes. The tax is collected on foreign automobiles at time of importation.

Kelly-Springfield Year Good

SPRINGFIELD, OHIO, Jan. 27—T. S. Lindsey, vice-president and sales manager of Kelly-Springfield Tire Co., has sent a letter to managers, office managers and salesmen of the company, stating that Kelly closed the year 1929 in excellent financial condition. According to Mr. Lindsey, the ratio of current assets to current liabilities on Dec. 31, 1929, was between 14 and 15 to 1. The company on this date had no bank loans outstanding. Mr. Lindsey further stated that Kelly had been able to retain all of its original equipment accounts.

International Plans Step-Up

CHICAGO, Jan. 28—Production at Farmall tractor plant of the International Harvester Co. in Rock Island will be increased to 200 tractors and 230 motors daily, starting Jan. 27. Seven hundred men will be added to the force to handle the increased production.

Canadian Plymouth Shipments

WINDSOR, ONT., Jan. 27—Shipments from the Canadian plant of the Plymouth Motors Corporation, Limited, totaled 12,161 units in 1929.

Toledo Manufacturers Protest French Tariff

TOLEDO, Jan. 29—The Willys-Overland Co. heads a group of Toledo manufacturers who, by telegram to United States Senators Simeon D. Fess and Roscoe McCulloch, have voiced concern over France's proposed increase in duties on American imported autos and auto parts.

Joining Willys-Overland in voicing its objections to the proposed increase in duty are: The Electric Auto-Lite Co., Bunting Brass & Bronze Co., Dura Co., Mather Spring Co., Tillotson Mfg. Co., Spicer Mfg. Co. and the Acklin Stamping Co. The manufacturers contend that the proposed new duty rate is prohibitive and aimed directly at the American auto industry.

The telegram to Senators Fess and McCulloch said in part: "The proposed changes will increase duties in varying amounts up to 92 per cent on vehicles and more than that on parts. Our industry will suffer seriously by this exclusion. We have information that similar prohibitive duties are contemplated in Germany. We sincerely trust that some action will be taken to prevent this discrimination against our product."

Other Ohio automotive concerns taking similar action include the Timken Roller Bearing Co., Firestone Tire & Rubber Co., Seiberling Rubber Co., B. F. Goodrich Rubber Co., Gramm Motors, Inc., Mullins Body Co., Ashtabula Bow Socket Co., Peerless Motor Car Co., The White Motor Co. and the Eaton Axle & Spring Co.

G.M. Men Move

NEW YORK, Jan. 28—Among recent movements of the Overseas personnel of General Motors Export Co. was the sailing of J. Bertell-Hansen, production manager of General Motors International, Copenhagen, who has been here attending the foremen's training course at General Motors Institute of Technology.

Others who have been attending the foremen's training course and who returned to their posts this week are T. Trane, superintendent of the chassis department of General Motors, India; W. Wallin, manager sales department of General Motors Nordiska, Stockholm, and N. P. Niedzwiedcki, field representative of General Motors Polsce, Warsaw.

H. J. I. Goetsch, general serviec manager, General Motors South African, returns to his post after attending the sales development conference of the Export company, and Frank Adgate, Cadillac-LaSalle specialist, sails for Europe on a trip which will cover the several plants.

Salon to Open

NEW YORK, Jan. 30—With a showing of chassis mounting creations in custom coachwork by prominent European and American carrossiers, the annual staging of the Automobile Salon on the Pacific Coast will open at the Biltmore, Los Angeles, Feb. 8.

Indianapolis Rules to be International

PARIS, Jan. 15—On the suggestion of the German Automobile Club, the International Racing Board, at its meeting held in Paris this week, decided to adopt the Indianapolis racing rules as international rules for major events in 1931, 1932 and 1933, subject to the following changes:

Piston displacement to be limited to 305 cu. in., no limitation to be placed on the number of valves or on the number of carburetors.

Several European automobile manufacturers, among them being Bugatti and Bentley, have objected to the limitation of two valves per cylinder, claiming that all their stock cars have a greater number of valves. It was felt too that 12 and 16-cylinder engines might be developed under this rule and for these a bigger number of carburetors than two should be allowed. A request has been made to Indianapolis to modify its rules for 1931 to bring them into harmony with those approved by the International Racing Board, thus securing really international racing rules for the first time in many years.

Junking Plan is Adopted by the Studebaker Corp.

CHICAGO, Jan. 27—The Studebaker Corp. of America has put into operation a plan by which dealers will be given a specified allowance for junking old cars, J. M. Cleary, sales manager, told Studebaker dealers at a dinner held in Chicago Jan. 26, during the National Automobile Show. Details of this plan will be outlined in a letter which will be sent to Studebaker dealers Feb. 1, Mr. Cleary said, adding that the factory expects to spend $1,000,000 or more in making allowances under the plan in 1930.

Speaking at the same meeting, H. O. Deitz, vice-president, Commercial Investment Trust Co., voiced the belief that the stock market crash had put automobile dealers not on their backs but on their toes.

Paul G. Hoffmann, vice-president in charge of sales of Studebaker, pointed out the necessity for definite management activity and training of salesmen by dealers and urged all dealers to assist as much as possible in any program looking to the improvement of traffic conditions in cities.

Budd Steel Consumption

NEW YORK, Jan. 29—In its Philadelphia plant alone the Budd Mfg. Co. used 140,464.3 tons of sheet steel in the production of all-steel automobile bodies in 1929, according to an announcement. The metal used in the Detroit plant has not yet been computed. An outstanding mechanical improvement in the Philadelphia plant is the recently completed installation of four miles of conveyor systems, which greatly simplify the handling of bulky materials.

American Viscosimeter Company is Organized

NEW YORK, Jan. 29—The American Viscosimeter Co. has been organized to manufacture and market the viscosimeter designed and patented by Harvey Konheim and Walter J. Albersheim, described in *Automotive Industries* of June 8, 1929. This company has its headquarters at 110 East Forty-second Street and has a plant at 450 Whitlock Avenue.

Joseph Leopold, president of Consolidated Instrument Co. of America, Inc., is president of this company; O. E. Stumpe of Lorenz, Stumpe & Lorenz is vice-president; John G. Schork is secretary and treasurer, and Harvey Konheim, coinventor, is director of research.

The company is a subsidiary of General Motive Control, Inc., a holding company having the same officers and capitalized at 1,000,000 shares no par common stock. There is outstanding of this stock 27,000 shares, of which 15,000 shares have been offered privately at $10 per share.

New Rugby Truck Line

CHICAGO, Jan. 29—The new line of Rugby trucks will be available for delivery to dealers within the next 60 days, R. T. Hodgkins, general sales manager, Durant Motor Co., told the 300 dealers who gathered at the Durant dealer luncheon in Chicago on Jan. 29. Prices on the new truck line were announced as follows: One-half ton chassis with cowl, $665; one-half ton Panel, complete, $885; one-ton chassis with cowl, $865; one-ton chassis with cab, $995; one-ton panel complete, $1,160.

Frederick J. Haynes, president of Durant, as well as Mr. Hodgkins, emphasized the very favorable reception which has been accorded the new Durant passenger cars in all of the shows held thus far. Decision to operate a plan for making allowances to dealers for the junking of old cars has been reached by Durant, J. A. Nichols, Jr., secretary and treasurer, stated, but no details for such a plan have yet been worked out.

Autocar Elects Three

ARDMORE, PA., Jan. 29—Three new directors were elected to fill vacancies on the board of the Autocar Co., motor truck manufacturers, at the regular January meeting. They are Conrad N. Lauer, president of the Philadelphia Gas Works; J. B. Warren of Prince & Whitely, New York, and Walter C. Janney of Janney & Co. Philadelphia. The annual meeting of the stockholders of the Autocar Co. will be held at the offices of the company here on Feb. 14.

Universal Has New Division

NEW YORK, Jan. 28—The Universal Fixture Corp. has opened an automotive division in charge of Martin Roth. Mr. Roth comes to this new connection after several years with the New York branch of the Berger Mfg. Co. as automotive shelving engineer.

Heat Control Problems in Forefront—Horning

CHICAGO, Jan. 29—The next decade presents major heat control problems to automotive engineers, according to H. L. Horning, president of the Waukesha Motor Co., in an address to the Chicago Section of the Society of Automotive Engineers, tonight, at the Stevens Hotel.

"We may expect compression ratios of seven to one during the next 10 years, as well as successful coping with air cleaning, lubrication heat control and better carburetion," he said.

"Cylinder wall lubrication has made practically no advance in the past 10 years, although engine speeds have increased to meet popular demand," he said. "Detonation and combustion chamber practices greatly improved, but there is plenty of room for improvement."

C. E. Summers, research engineer, Oakland Motor Car Co., and Adam K. Stricker, of the engineering department of the Cadillac Motor Car Co., explained the features of the new eight-cylinder Oakland and the 16-cylinder Cadillac, respectively. The Section Meeting was presided over by D. P. Barnard, of the Standard Oil Co., section chairman. Three hundred attended the meeting.

N.S.P.A. Adds Members

DETROIT, Jan. 28—The election of 19 new members including 16 wholesalers and three manufacturers was announced by the National Standard Parts Association, following a meeting of the membership committee of that organization on Jan. 23. The action of the membership committee and the subsequent approval by the board of directors swells the N.S.P.A. roster to a total of 453 members, being divided, 246 jobbers and 207 manufacturers. The following manufacturing concerns are newly elected: The Greb Co., Boston, Mass.; Shaler Co., Milwaukee, Wis.; Utica Drop Forge & Tool Co., Utica, N. Y.

Andre Visiting U. S.

NEW YORK, Jan. 29—T. B. Andre, managing director of T. B. Andre & Co., British manufacturer of accessories and owner of the patent on Silentbloc rubber spring shackle, arrived in New York yesterday on the S.S. *Bremen* and plans to spend several weeks in this country renewing acquaintance with his friends in the American industry and consolidating activities affecting the use of Silentbloc in this country. He is accompanied on this trip by Leon Thiry, inventor of the Silentbloc, and an authority on various uses of rubber for suspension purposes.

Gabriel to Market Spring-Cover

CAMBRIDGE, MASS., Jan. 28—The Anderson Mfg. Co., maker of Anderson Ajax steel spring-covers, has appointed the Gabriel Mfg. Co., Cleveland, as its exclusive distributor to the wholesale and retail automotive trade, according to an announcement from the former company.

Financial Notes

Noblitt-Sparks Industries, Inc., Indianapolis, earned $9 a share on its common stock and increased net income 129 per cent last year, it has been announced today by Q. G. Noblitt, president. Mr. Noblitt stated that the annual report will show total sales of $5,362,157 for the year 1929, which is 84 per cent greater than the $2,901,371 total of 1928. Net income after taxes, depreciation and charges amounted to $675,480 or $9 a share on the 75,000 shares of common stock outstanding. This compares with $294,603 or $4.91 a share on the 60,000 shares of stock outstanding in 1928.

Chain Belt Co. sales for 1929 are just over eight million dollars. This is $900,000 more than in 1928, according to C. F. Messinger, general sales manager. It is expected that the Chain Belt Co.'s earnings for 1929 will be $7.00 per share. For 1928, they were $5.27, and the average for five years is $5.10.

Deere & Co. report profits for 1929 as nearly doubled over the previous year. Net income was $15,181,940, equal after preferred dividends to $68.60 a share on common stock, compared with $9,299,068 or $37.50 a share last year.

Motor Bakers Corp. reports earnings of $308,957, $2.99 a share, on 149,713 shares of common stock outstanding for 12 months ended Dec. 31, 1929. This compares with $218,753 for the B.

Allegheny Steel Co. plans to make application to list its stock on the New York stock exchange. At present, the shares are listed only on the Pittsburgh stock exchange.

Bohn Aluminum and Brass Corporation for the year ended Dec. 31, had net profit of $2,619,384 after charges and Federal taxes, against $3,185,092 in 1928.

Eisemann Magneto Co. has declared regular quarterly dividend of $1.75 payable Feb. 1 to stockholders of record Jan. 20.

G.M. Employees Benefit

NEW YORK, Jan. 31—General Motors Corp. is distributing to 15,177 of its employees through the savings and investment fund $8,608,000, consisting of $2,768,245 in cash and 145,994 shares of General Motors common stock.

This distribution is being made to the investment fund class of 1924 which matured at the end of 1929. Any employee who put into the fund during 1924 a total of $300 now receives a total of $1,415.

Dodge Trucks Increased

DETROIT, Jan. 27—Price increases ranging from $70 to $120 have been announced on three-ton models of Dodge Bros. trucks, according to an announcement from the company. Increases on two-ton models range from $30 to $50, on one-ton models from $10 to $50. An increase of $20 has been made on each of the three-quarter-ton and half-ton types, according to the announcement.

Fiat Completes Track for Testing Chassis

PARIS, Jan. 21—Supplementing its chassis test track on the roof of the Lingotto factory, in the suburbs of Turin, Fiat has just completed work on a proving ground at Stupinigi, about two miles from the factory. This is the only private proving ground in Europe, although several firms have short test tracks within their factory grounds and numbers of French manufacturers maintain technical staffs for tests on Montlhery track, near Paris.

The Fiat proving ground is a straightaway two and a half miles long, through woodland surrounding the Stupinigi castle, and follows the line of an ancient royal road which had become a mere track. For the first 1000 yd. the road is 50 ft. wide, and comprises a central portion 19½ ft. wide having a perfect surface, with two (left and right of it) tracks 15 ft. wide, each divided into sections with various surfaces. These comprise granite sets, herringbone paving, ordinary macadam, rough macadam, concrete with pot holes, smooth concrete, humps, gulleys, street car rails, water splash, etc.

Truck Executives Elect

CLEVELAND, Jan. 29—H. C. Keltin of Louisville, Ky., was elected president of the Truck Association Executives of America at the second annual convention of that body held at Cleveland. Mr. Keltin succeeds W. H. Beardsley of the Pennsylvania Motor Truck Association. Mr. Simpson of Pittsburgh was chosen vice-president and Tom Snyder of Indianapolis secretary and treasurer. Duplicate license taxation of trucks was condemned by resolution. Edward F. Loomis, secretary of the Truck Committee of the National Chamber of Commerce, outlined the chamber's new educational program to executives and James W. Cottrell, technical editor, *Commercial Car Journal and Operation & Maintenance*, discussed maintenance.

Francis Cole Pratt

NEW YORK, Jan. 28—Francis Cole Pratt, former vice-president and chairman of the manufacturing committee of the General Electric Co., died Jan. 26 in New York City after an illness of six weeks. Born in 1867 at Hartford, Conn., he was graduated from the Sheffield Scientific School of Yale University with the degree of Ph. B. in mechanical engineering in 1888. After graduation he was associated with the Pratt & Whitney Co., machine tool manufacturers, of which his father was president and one of the founders, continuing with them until he became vice-president.

Pierce-Arrow Sales Gain

CHICAGO, Jan. 25 — Pierce-Arrow sales in January this year will exceed those of January, 1929, by more than 100 per cent, A. J. Chanter, vice-president and general manager, said here today.

Steel Mill Output Gains on Hand-to-Mouth Buying

NEW YORK, Jan. 30 — Steel mills continue to make gains in their rate of operations. One of the large "independent" producers who specializes in full-finished automobile sheets is reported to be operating at 80 per cent of capacity this week. Nearly all of the business from automotive consumers, however, is of the hand-to-mouth buying sort, and there has been little opportunity for the mills so far to build up backlogs.

Ford buying, while consistent, fails to reflect anticipation of requirements to any greater degree than is the case with other consumers, being merely proportionate to the nearby needs called for by the manufacturing schedules of the Ford plants. The market is perhaps a shade steadier than it was a fortnight ago, but some pressure on semi-finished steel prices by non-integrated rollers who have had to come down on the prices for their finished products is still in evidence. This is particularly true of wire rods.

Wire manufacturers recently announced a cut in prices for wire mill products sold through jobbers, but let it be clearly understood that prices for so-called manufacturers' wire, which is somewhat of a different product, were not affected by the change. Prices for cold-finished steel bars have been adjusted to the lower levels prevailing in the market for hot-rolled steel bars. Competition among producers of cold-finished bars continues very keen in the Detroit market. A slight broadening of demand for automotive alloy steels is noted. Chicago district mills report a marked increase in prompt shipment orders for sheet-bars from rollers catering to automotive consumers. All in all, conditions indicate slowly rising demand from now on.

Pig Iron—The market for foundry and malleable irons wears a somewhat better face. The melt of automotive foundries is on the increase, and they are taking more interest in the market, but continue to place orders with caution. Current quotations show no change.

Aluminum—Automotive consumers are more active in the market. Most of the business for foundry metal is for immediate delivery. Canadian exports of aluminum in 1929 aggregated 73,000,000 lb., of which 28,000,000 lb. were shipped to the United States. These figures show an increase in Canadian aluminum exports of 80 per cent over the preceding year, but of only approximately 24 per cent in shipments to the United States, indicating the growth in output of the American producer at his Canadian subsidiary as well as the greater diversification of his export markets. Prices are unchanged.

Detroit Gasket Elects

DETROIT, Jan. 29—At the annual meeting of the stockholders of Detroit Gasket and Manufacturing Co. officers were reelected. The company reported net earnings after taxes and depreciation and all non-recurring charges except dividends, of $514,109 or $3.13 per share on 164,250 shares common stock outstanding.

Vanderbilt Cup is Reposted by Donor

DAYTONA BEACH, FLA., Jan. 27—On a purely sporting, scientific basis, the William K. Vanderbilt, Jr., Cup, unique among automobile racing trophies, has been reposted for competition.

Val Haresnape, director of the speed trials here two months hence, announced that the American Automobile Association had sanctioned revival of the classic here in March, after a lapse of more than ten years.

It is designed for stock car competition over a flying measured mile, simply for possession of the trophy; no cash awards are made. It was last placed in competition at Santa Monica, Cal., and first awarded in 1904.

Previous efforts to restore the cup to competition after the Santa Monica race, Mr. Haresnape said, failed because the donor was not satisfied with existing regulations. Restoration of the speed trials here, however, paved the way.

Develops Snow Solvent

NEW YORK, Jan. 27—"Snowmelt" is the name of a new chemical snow-removing solvent discovered by Dr. H. E. Barnes, and now made commercially available by the Associated Engineering Development Corp., New York. The solvent may be applied by any type of spraying or flushing apparatus, and is not injurious to materials. The cost of application is calculated not to exceed one cent per sq. yd.

A. C. E. Rateau

PHILADELPHIA, Jan. 29—From Paris comes the report of the death there on January 13 of Professor A. C. E. Rateau, one of France's leading engineers who specialized in steam turbines and centrifugal compressors. To the automobile industry Professor Rateau is known more particularly as the inventor of the Rateau turbo compressor for supercharging aircraft engines.

Dodge Orders More Engines

WILLIAMSPORT, PA., Jan. 29—An order for 1000 additional Lycoming marine engines to meet the demand for Dodge boats for 1930 has been placed by the Horace E. Dodge Boat & Plane Co. of Detroit with the Lycoming Mfg. Co. of this city. The announcement was made by W. H. Beal, vice-president of Lycoming.

Sterling Reports Increase

MILWAUKEE, Jan. 27—The Sterling Motor Truck Co., Milwaukee, reports an increase of fully 25 per cent in deliveries, compared with the same period a year ago, in the period from the close of its fiscal year on Oct. 31, 1929, to the middle of January. Prospects for the remainder of the present fiscal year are said to be for a continuance of gains of at least the same percentage.

History of Transport to be Shown at St. Louis

NEW YORK, Jan. 28—The history of transportation will be depicted in one of the displays held at the International Aircraft Exposition sponsored by the Aeronautical Chamber of Commerce in St. Louis, Feb. 15 to 23.

The exhibit will lay emphasis on the development of aviation, tracing its growth from the time of Archytas and other early experimenters down to the modern machine. The Columbia, with which Clarence Chamberlin crossed the Atlantic, will be the central figure in one section of this exhibit dealing with outstanding flights of the past 12 years.

The commercial airplane manufacturers' section of the A. C. of C. will meet in connection with this show Feb. 17. It is hoped that as the result of this meeting more concrete ideas regarding the merchandising of aircraft will be gained. The section will consider the feasibility of issuing monthly production and sales reports to members and the adoption of a code of ethics, and the commercial manufacturers will discuss airworthiness requirements needed to obtain approved type certificate.

Wayne Changes Name

DETROIT, Jan. 27 — Following a change effective Jan. 1, the chemical division of the Wayne Soap Co. is now known as the Wayne Chemical Co. There is no change in either ownership, products, policies or personnel, it is explained. The new name more accurately suggests the present business and products of the chemical division, products including lubricants, non-rust oils and other chemical compounds, according to Edgar C. Behr, president.

Opel Works Resumes

PHILADELPHIA, Jan. 29 — After having been closed down for the taking of an inventory, the Opel Automobile Co. of Germany started again with a force of 7000 early in January. In the future the firm will turn out only two models, of 4/20 and 8/40 hp. rating, instead of five as heretofore. In these ratings the first figure is the tax rating of the car and the second the actual horsepower of the engine.

Ford Canadian Sales Gain

DETROIT, Jan. 29—Wallace R. Campbell, president of the Ford Motor Co. of Canada, Ltd., has announced that sales of Ford cars and trucks to dealers for the year 1929 amounted to 87,504 units, exceeding the 1928 total by 12,264 units.

Bosch Suit Dismissed

WASHINGTON, Jan. 27—Dismissal of the Bosch Magneto case now pending in the United States District Court for the District of Massachusetts has been announced by the Department of Justice.

Miller Holders Get Terms of Merger With Goodrich

AKRON, Jan. 27—Letters, informing stockholders of the Miller Rubber Co. of the rate at which they may exchange their stock for that of the B. F. Goodrich Co. common shares, in connection with the purposed merger of Miller with the Goodrich concern, were mailed to Miller stockholders Jan. 24.

Miller common stockholders may exchange their shares on a basis of 11 shares of Miller for one share of Goodrich. Preferred stockholders may exchange one share of Miller for 4/5 of a share of Goodrich common if unanimous agreement to the terms is gained. If unanimous consent is withheld, the ratio of exchange will probably be 7/10 of a share of Goodrich for one of Miller. Miller stockholders will meet on Feb. 17 to pass upon the purposed merger.

Lycoming to Begin Deliveries

WILLIAMSPORT, PA., Jan. 27—Delivery of 3200 marine engines will be begun Feb. 15 by Lycoming Manufacturing Co. to the Dodge Motor Boat Co., Detroit, with a final delivery date of June 1, according to W. H. Beal, vice-president of Lycoming, subsidiary of Auburn Automobile Company. A new unit capable of building 1500 marine engines monthly has been completed in the Lycoming factory, to take care of the 1930 program, including the Dodge order.

Brake Lining Standards Continue

WASHINGTON, Jan. 27—Simplified practice recommendations No. 66, Automobile Brake Lining, and No. 67, Roller Bearings, have been reaffirmed without change for another year, according to an announcement by the Division of Simplified Practice, Bureau of Standards. Surveys of production disclosed that 78 per cent of the automobile brake lining and 58 per cent of the roller bearing industry had adhered to the simplified programs.

Buffalo to Have Air Show

NEW YORK, Jan. 27—There will be an aircraft show in Buffalo from March 22 to 29 at the Buffalo Auditorium, according to announcement made today by the Aeronautical Chamber of Commerce. Sanction has been given by this body for a Class C show at Buffalo, the specification indicating that the show will be supported by Buffalo distributors and dealers and aircraft manufacturers located in the town.

Chevrolet Expects 1,500,000

DETROIT, Jan. 27—The Chevrolet Motor Co. expects to produce and sell 1,500,000 units this year, according to a statement by W. S. Knudsen, president. Mr. Knudsen's declaration, which was made in connection with a convention of some 1100 of the company's dealers and salesmen here, was based, he said, on a survey of dealer demand throughout the country.

U. S. Tire Makers Aid Soviet Resino Trust

PHILADELPHIA, Jan. 27—According to an item appearing in the Russian *Workers Gazette* of Nov. 16, a series of agreements of technical cooperation have been signed by the Rubber Trust or Resino Trust with American firms. The Seiberling firm is to work out the plans for a large pneumatic tire factory to be built at Iaroslav and will supervise the start of production in it. A general plan has been submitted to the Trust already. The American firm places its processes and patents at the service of the Soviet Trust.

The Akron Reclaiming Co. is to furnish to the Trust the plans for a rubber reclaiming plant. A similar contract was signed with the Multibestos Co. of Boston for the erection of an asbestos products plant. The three firms mentioned have agreed to receive Russian specialists in their works with the object of training them in their methods.

Contracts of a more limited character have been concluded with certain other firms, notably Smitten & Co., which will reveal to the Trust certain processes employed in the rubber industry. Finally the Trust has engaged in its service certain technicians who have been working in the Soviet plants for a number of years.

Crude Rubber Steady

NEW YORK, Jan. 27—Reports of restricted production of crude rubber in Dutch and British-owned plantations has steadied the market here, according to F. R. Henderson Corp. This company believes that present price levels will be maintained pending further news of a restriction move. Stocks of crude rubber in London were increased to 59,607 tons with Liverpool stocks increased to 19,515 tons.

To Have Tractor Session

MILWAUKEE, Jan. 27—The next regular session of the Milwaukee Section of the S.A.E. on Wednesday, Feb. 5, will be devoted entirely to tractors, in recognition of the growing importance of this region as a producer of tractors. The afternoon will be spent inspecting the tractor works of the Allis-Chalmers Mfg. Co., and following a dinner at the Allis-Chalmers Club, leading tractor engineers will read technical papers. Engineers from Milwaukee, Racine, Kenosha, Waukesha and other points will attend.

Monroe Distributors Convene

MONROE, MICH., Jan. 27—A convention, attended by a large representation of Monroe's 800 distributors of Hydraulic Two-Way Shock Absorbers, last week discussed the prospects for 1930. President C. S. McIntyre stated they would build over 2,500,000 units this year. The Monroe Shock Absorber is now standard equipment on the Hupmobile Six, Willys-Overland cars, Essex and Durant, he said.

Whippet Prices Reduced by Willys-Overland

CHICAGO, Jan. 27—Price reductions on the Whippet 96-A line, amounting to $45 in the touring car and the sedan and $50 in each of the other body models, have been announced by the Willys-Overland Co. New and old prices, f.o.b. factory, follow:

	New	Old	Reduction
Touring	$475	$520	$45
Roadster	475	525	50
Roadster (2-4-pass.)	505	555	50
Collegiate Roadster	545	595	50
Coupe (2-pass.)	525	575	50
Coupe (2-4-pass.)	555	605	50
Coach	525	575	50
Sedan	585	630	45
De Luxe Sedan	645	695	50

Maddux Succeeds Keys

NEW YORK, Jan. 27—C. M. Keys has retired as president of Transcontinental Air Transport-Maddux Lines to become chairman of its board of directors. His place as president is taken by J. L. Maddux, founder of the Maddux system on the west coast. Daniel M. Sheaffer, vice-president in charge of traffic of the Pennsylvania Railroad, has become chairman of the T.A.T. executive committee.

Pioneer Plans New Plant

WAUKESHA, WIS., Jan. 27—Construction of a new plant on a new site before the end of 1930 is planned by the Pioneer Foundry Co., Waukesha, Wis., maker of gray iron castings. The Pioneer lease expires May 1, but an indeterminate extension has been granted to give the concern an opportunity to provide itself a new plant. Arthur J. Nickell, Jr., is the chief owner of the business.

Court Orders Property Sale

MILWAUKEE, Jan. 27—The Federal court at Milwaukee has entered an order for the disposition of the real estate of the Horse Shoe Tire Co., Racine, Wis., manufacturer of tires and tubes. When the company ceased operations a year ago, creditors' claims amounted to about $300,000. Through the liquidation of stock, equipment, etc., these claims have been reduced to $244,809.

Louisville Show Ends

LOUISVILLE, Jan. 27—The 1930 Louisville Automobile Show was concluded with more than 75,000 persons having visited the show during the seven days, from Sat. Jan. 18, through Sat. Jan. 25, inclusive, excepting Sunday, when the doors were closed. Attendance this year was not as large as in some previous years.

Rochester Show Successful

ROCHESTER, N. Y., Jan. 27—The Twenty-second Annual Rochester Automobile Show closed Jan. 25 with a record of $225,000 in sales and an attendance increase of 10 per cent over 1929. More than 40,000 persons visited the show at Edgerton Park during the week. It opened on Jan. 20.

Exports, Imports and Reimports of the Automotive Industry for Years of 1928 and 1929

	Month of December				12 Months Ending December			
	1928		1929		1928		1929	
EXPORTS	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories	..	$34,212,956	..	$25,676,563	..	$500,176,694	..	$539,290,517
Electric trucks and passenger cars	26	30,010	22	21,614	138	177,559	170	247,568
Motor trucks and buses except electric (total)	8,995	6,765,904	10,908	6,358,236	138,768	91,360,853	196,758	11,435,125
Up to 1 ton, inclusive	6,246	3,319,065	8,399	3,543,784	104,666	51,343,934	151,010	65,235,437
Over 1 and up to 2½ tons	2,543	2,895,340	2,339	2,321,055	30,996	32,201,309	42,418	37,646,143
Over 2½ tons	206	551,499	170	493,397	3,106	7,815,610	3,330	8,553,545
PASSENGER CARS								
Passenger cars except electric (total)	20,946	16,723,156	13,831	10,305,108	368,329	263,575,739	339,443	234,284,194
Low price range, $1,000 inclusive	13,081	6,872,224	8,924	4,432,359	280,440	149,986,264	254,218	129,771,602
Medium price range, $1,000 up to $2,000	6,805	7,541,657	4,368	4,647,651	76,335	85,732,467	75,253	80,862,641
High price range, over $2,000	1,060	2,309,275	539	1,225,098	11,554	27,857,008	9,972	23,649,951
PARTS, ETC.								
Parts, except engines and tires	..	..	..	..	..	..	..	..
Automobile unit assemblies	..	4,400,579	..		..	62,421,406	..	107,672,682
Automobile parts for replacement (n.e.s.)	..	4,880,987	..	3,841,337	..	60,333,587	..	66,026,307
Automobile accessories	..	816,096	..	582,702	..	9,281,358	..	9,409,050
Automobile service appliances (n.e.s.)	..	735,839	..	496,705	..	7,365,240	..	7,529,799
Trailers	78	38,558	74	17,830	854	396,403	1,038	477,346
Airplanes, seaplanes and other aircraft	14	155,443	23	443,146	162	1,759,653	347	5,485,200
Parts of airplanes, except engines and tires	..	100,342	..	244,089	..	1,240,244	..	2,272,208
BICYCLES, ETC.								
Bicycles	361	8,493	372	9,840	5,089	133,848	6,108	141,481
Motorcycles	1,565	377,389	982	241,834	18,934	4,402,576	16,265	3,710,851
Parts and accessories, except tires	..	91,218	..	89,390	..	1,472,054	..	1,131,677
INTERNAL COMBUSTION ENGINES Stationary and Portable								
Diesel and Semi-Diesel	31	174,180	154	161,894	941	1,246,792	904	1,261,307
Other stationary and portable:								
Not over 10 hp.	3,721	282,850	2,280	167,212	39,528	3,310,157	35,694	3,090,787
Over 10 hp.	169	102,830	233	140,800	4,761	2,015,931	4,453	2,321,447
Automobile engines for:								
Motor trucks and buses	593	81,433	213	26,281	16,244	1,651,319	8,331	1,154,846
Passenger cars	5,368	514,791	1,370	151,721	108,061	11,374,824	87,072	9,060,745
Tractors	6	1,603	37	12,640	672	214,686	842	286,185
Aircraft	17	92,892	19	66,050	179	664,826	321	1,375,697
Accessories and parts (carburetors)	..	269,818	..	..	..	3,501,918	..	..
IMPORTS								
Automobiles and chassis (dutiable)	67	96,111	48	51,113	566	1,201,323	750	1,190,140
Other vehicles and parts for them (dutiable)	..	68,181	..	42,256	..	629,362	..	1,709,665
REIMPORTS								
Automobiles (free from duty)	15	12,748	25	41,299	263	285,667	465	618,115

Chromium Use Reviewed

WASHINGTON, Jan. 27—The automotive industries are playing an important part in the rapid expansion in the consumption of chromium, according to a review of the situation by Lewis A. Smith, just made public by the Bureau of Mines. Mr. Smith said that the most noteworthy recent developments include the extensive adoption of chromium plating, especially for automobile parts; the increased utilization of rustless iron and steel and nickel-chromium steel; and the further substitution of chromite refractories for magnesite refractories, due to a favorable price differential.

O'Shea Made President

NEW YORK, Jan. 27 — Benjamin O'Shea, formerly president of the Union Carbide Co. and the Electro Metallurgical Co., both units of Union Carbide & Carbon Corp., has been elected chairman of the board of these companies. Fred H. Haggerson, former vice-president of the two companies, has succeeded Mr. O'Shea as president, and F. P. Gormely has been elected vice-president and general manager of the two companies.

Auburn Output Gains

CHICAGO, Jan. 25 — Production of Auburn and Cords cars this January will exceed that of January, 1929, by nearly 20 per cent, Roy Faulkner, vice-president, Auburn Automobile Co., said here today. Auburn output totaled around 1260 in the first month of 1929, Mr. Faulkner stated, while that total already had been reached more than a week before the end of the month this year. Retail sales are equally in excess of 1929, he said, as production is being held strictly within the bounds of retail market requirements.

Bopp Steel Adding

DETROIT, Jan. 27—Bopp Steel Corp. has begun construction of the first unit of its plant in Dearborn. The structure, which will be 288 ft. in length, will be completed April 1, and will cost $50,000. Four additional plants representing an expenditure of $250,000 will be constructed later, according to A. J. Bopp, president. The company will be engaged in the manufacture of cold strip steel for automobiles.

Boston "Old Timers" Meet

BOSTON, Jan. 25 — The annual luncheon of "The Old Timers," men who figured in the early motor show, some of them organizers of the first show ever held in Boston, proved an interesting event of show week here. Ex-Governor Alvan T. Fuller, Packard and Dodge distributor for eastern New England, did not get along in time to be in the picture, but he figured in the speaking, being the first called upon.

Hupp Demand Increases

CHICAGO, Jan. 25—Increased dealer demands will result in higher output in February than in January of this year for Hupp Motor Car Corp., according to Rufus S. Cole, vice-president in charge of sales. Hupp is one of the factories which will embark on a plan involving an allowance to dealers for junking of old cars.

Vogt Buys Waterloo Mill

ROCHESTER, N. Y., Jan. 27—The Vogt Manufacturing Co. of Rochester, N. Y., specializing in the manufacture of cloths and interior trimmings for the automotive trade, has purchased the Waterloo Textile Corp., operating a plant at Waterloo, N. Y., about 50 miles from Rochester. Although the purchase price was not learned, it is known the textile business was valued at $1,500,000. The purchase was made with surplus funds. The name of the Waterloo business has been changed to Waterloo Mills, Inc., and the plant henceforth will specialize exclusively in cloths for the automotive trade.

Heads New Jack Company

NEW YORK, Jan. 27 — Joseph Schultz, Suite 723, 522 Fifth Ave., is heading a company owning the British and American patents on a hydraulic jack by means of which any one of the wheels of an automobile can be raised, or all four simultaneously. It is known as the Jackall. Operation may be either by hand or by power, but hand operation is said to require so little effort that there is really no need for power operation.

Club to Meet on Shipboard

NEW YORK, Jan. 27—The Overseas Automotive Club will hold its February meeting aboard the S. S. *Aconcagua* of the Chilean Line on Tuesday, Feb. 4. This date is somewhat in advance of the usual meeting of the club but was set at that time in order that it might be held aboard this ship. The luncheon will be served in Chilean style and the program of the meeting will be devoted to Latin America.

Aero Chamber Sanctions Increase in Governors

NEW YORK, Jan. 27—Aeronautical Chamber of Commerce of America, Inc., at a meeting held here last week, voted to increase the membership of the board of governors to 27. The board originally contained 21 members. This action will require an amendment to the by-laws and a special meeting has been called for March 1 to enact the necessary revision and to elect the new members of the board.

The following Class A governors were selected by the nominating committee today for election at the March 1 meeting: Louis H. Mueller, San Francisco, Varney Air Lines, Inc.; H. M. Hanshue, Los Angeles, Western Air Express, Inc., and Fokker Aircraft Corp.; Col. Paul Henderson, Chicago, National Air Transport and Transcontinental Air Transport, Inc.; E. L. Cord, Auburn, Ind., Stinson Aircraft Corp.; F. B. Rentschler, Hartford, Pratt & Whitney Aircraft Corp.; Charles L. Lawrance, New York, Wright Aeronautical Corp.; G. B. Grosvenor, New York, The Aviation Corp.; J. T. Trippe, New York, Pan American Airways, Inc.; Carl S. Reed, New York, Fairchild Aviation Corp.; Fred Worthey, Los Angeles, Axelson Aircraft Engine Co.; Carl Cessna, Wichita, Cessna Aircraft Co.; Edward S. Evans, Detroit, Detroit Aircraft Corp.; F. H. Russell, New York, Curtiss Aeroplane & Motor Co.; L. V. Kerber, Tulsa, Spartan Aircraft Co.; J. C. Hunsaker, Akron, Goodyear-Zeppelin Corp., and H. L. Williams, New York, Air Investors, Inc.

The following Class B governors were proposed by the nominating committee: E. E. Aldrin, New York, Standard Oil Co. of New York; Charles H. Colvin, New York, Pioneer Instrument Co.; E. E. Willson, Pittsburgh, Hamilton Standard Propeller Co.; S. L. Gable, Bridgeport, Pa., Summerill Tubing Co.; J. R. Fitzpatrick, Chicago, Haskelite Mfg. Co.; John R. Cautley, South Bend, Ind., Bendix Brake Co.; Carl B. Fritsche, Detroit, Aircraft Development Corp., and Reed Chambers, New York, United States Aviation Underwriters.

P. G. Kemp of Central Air Terminal Co., Chicago, was nominated as the Class C governor; W. E. Metzger, National Glider Association, Detroit, associate governor, and William P. MacCracken, Jr., New York, New York-Rio and Buenos Aires Line, as sustaining governor.

Ford Has New Power Unit

DETROIT, Jan. 27—A Ford industrial power unit, designated the Model A and comprising a slightly modified Model A passenger car engine, a clutch and the Model AA Ford truck 4-speed transmission, has been placed on the market by the Ford Motor Co. and will be sold through its retail organization. An exhibit was made of this new power unit at the Road Show in Atlantic City recently. The retail price of the unit is $190.

Crude Rubber Output May be Restricted

NEW YORK, Jan. 27—The Dutch East Indies government has declared itself agreeable in principle to restriction of crude rubber production but will not identify itself officially with such a movement, according to a cablegram received this week by the Rubber Exchange of New York. This cable states that the government in its official statement has declared itself agreeable to the eventual restriction of rubber output for the purpose of reaching better prices, provided that the restriction measure is based on voluntary cooperation and is of a purely private character.

One of the British companies, which is a large producer of crude rubber, has taken a definite step in this direction, according to further advices received by the Rubber Exchange. The Telogoredjo United Planters, Ltd., has announced that it will curtail rubber production during 1930 by ten per cent. It is deemed likely that other companies will adopt a similar policy.

Completes Engine Tests

GLENDALE, CAL., Jan. 28 — Announcement has been made by the Kinner Airplane & Motor Corp. that tests on the 190 hp. Kinner engine under development by the company have been successfully completed. Like the Kinner 100 hp. engine, which model the company will continue to manufacture, the 190 hp. is a five-cylinder radial air-cooled type. It develops its rated horsepower at 1900 r.p.m., and in tests it has been run for periods at 1970 r.p.m.

Settle Patent Litigation

NEW YORK, Jan. 27—Patent litigation arising during the Safe Aircraft Contest of the Daniel Guggenheim Fund for the Promotion of Aeronautics between the Curtiss Aeroplane and Motor Co., Inc., and Handley-Page, Ltd., has been settled by the payment to Curtiss of $500 license fee and the removal of the Handley-Page plane from this country.

Badger Plans Addition

MILWAUKEE, Jan. 27—The Badger Auto Body Co., specializing in the production of body equipment for commercial cars, contemplates the erection of a 1-story factory addition, 80 ft. by 237 ft. Plans are being drawn by the Hinkley Co., 5368 Greenfield Avenue. Work probably will start early in the spring. A. A. Lienemann is president and treasurer of the company.

Stutz Factory Branch Sold

PHILADELPHIA, Jan. 27—By order of the Receiver in Bankruptcy, the stock and equipment of the Pennsylvania Stutz Motors, Philadelphia, was sold at auction on Friday, Jan. 17. The sale included 22 new Stutz automobiles. The Service Rights of the Pennsylvania Company sold for $700.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, Jan. 29—The severely cold weather last week in several sections of the country hampered retail trade. The textile trades were dull, with no improvement in the demand for finished goods. The most favorable reports came from the heavier trades.

INDUSTRIAL ACTIVITY

Industrial activity during December, based on the consumption of electrical energy by 3600 manufacturing plants, was 5.3 per cent below that in November and 8.6 per cent below that a year ago.

COAL PRODUCTION

Production of bituminous coal in the week ended Jan. 11 amounted to 11,143,000 tons, as against 10,116,000 tons in the preceding week and 11,670,000 tons a year ago. Production of Pennsylvania anthracite in the week ended Jan. 11 amounted to 1,579,000 tons, as against 1,354,000 tons in the preceding week and 1,749,000 tons a year ago.

FREIGHT CAR LOADINGS

Railway freight loadings for the week ended Jan. 11 totaled 863,191 cars, which marks a decrease of 51,247 cars below those a year ago and a decrease of 44,110 cars below those two years ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended Jan. 25 stood at 93.7, as against 93.2 a week earlier and 93.1 two weeks earlier.

STOCK MARKET

The stock market last week showed more activity than in the few preceding weeks, with the volume of transactions increasing from day to day with prices showing a rising tendency. Although there were some exceptions, the prices of most issues showed net gains for the week. Call money ranged from 4 to 4½ per cent.

BROKERS' LOANS

Brokers' loans in New York City for the week ended Jan. 22 decreased $24,000,000, reducing the total to $3,341,000,000, as against $5,443,000,000 a year earlier.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended Jan. 22 showed decreases of $9,100,000 in holdings of discounted bills, of $25,000,000 in holdings of bills bought in the open market and of $2,400,000 in holdings of Government securities. Member bank reserve deposits increased $2,200,000. The reserve ratio on Jan. 22 was 76.3 per cent, as against 75.4 per cent a week earlier and 72.9 per cent two weeks earlier.

Custom Body Builders See Evolution in Coachwork

DETROIT, Jan. 27—No revolution, but an evolution in color effects and interior designs is predicted for the automobile industry by leading custom body builders who were here for the Detroit Automobile Show.

Hermann A. Brunn, president of Brunn & Co., Inc. of Buffalo, and Francis Willoughby, president of the Willoughby Company of Utica, together with John B. Judkins, president of the John B. Judkins Company of Merrimac, Mass., were visitors at the exhibit here last week and each expressed gratification at the exhibits and the crowds in attendance.

Mr. Brunn has just returned from France, where he attended the Paris Salon and while in nowise disturbed over the progress made by French body builders he nevertheless paid unqualified tribute to the daring of the continental designers.

Mr. Willoughby, who has devoted especial attention to colors in his custom built bodies, was of the opinion that the higher class cars would continue to show the same refinements and dignity but that still bolder combinations would be attempted in certain other productions.

Ford Increases Schedule

DETROIT, Jan. 27 — Production of Ford cars and trucks will be increased to 136,000 units in February and indications are that the Ford business will be larger this spring than in any spring in the last five years, the Ford Motor Co. has announced. March production will be at least 170,000 units, it was said. This increase in output is the result of unusually heavy demand from all parts of the country, especially in Southern States, according to the company.

Plans Factory Addition

WAUSAU, WIS., Jan. 25—Bids are about to be taken by the Marathon Rubber Products Co., Inc., Wausau, Wis., for a 1-story fireproof manufacturing extension, 86 ft. by 121 ft.

Stock Cars to Race in British Classic

LONDON, Jan. 18—On the invitation of the Government of Northern Ireland for the third year in succession, the English Royal Automobile Club will organize a road race for stock cars on the Ards Circuit near Belfast on Saturday, Aug. 23 next. It will again be run on a handicap basis, by classification, according to piston displacement; the smaller cars will be credited with a lap, or laps, completed before the start, and —additionally on this occasion—with time allowances according to variations in engine size within the range of the individual class.

The smallest class will be for cars of up to 750 cc. capacity, which includes the Austin Seven, an example of which last year came close to winning, though the biggest car then competing (a Mercedes of over 5000 cc.) gained premier place with a margin of seconds only.

Du Pont Net is Up

NEW YORK, Jan. 27—E. I. du Pont de Nemours & Co. reports net income available for dividends after preferred dividends and other fixed charges of $72,300,626 for 1929 as compared with $58,733,238 in 1928. This represents an increase of $13,567,388, equivalent to $7.09 a share, on the average number of outstanding shares and compares with $6.27 in the previous year. Income derived from holdings in General Motors Corp. amounted to $42,939,452 as compared with $37,929,328 for the previous year.

Verville is in Production

DETROIT, Jan. 27—With final designs and production plans completed, six airplanes are now going through the factory of the Verville Aircraft Corp. The first of these is scheduled to be finished in time for the Detroit Aircraft show. Improvements made in the ship since it was shown last year include detailed improvements in the braking system and the adoption of a new tail wheel.

Aeronautical Chamber Adds 112 Per Cent to Roster

NEW YORK, Jan. 27 — The Aeronautical Chamber of Commerce, Inc., showed an increase in membership of 112 per cent and now represents 95 per cent of the aircraft industry, according to a report read here before the annual meeting of the Chamber, Thursday of last week, by Frederick B. Rentschler, president. Membership at the end of 1929 was 966 as compared with 456 at the beginning of the year. The largest gain was in the group which includes distributors and dealers, flying schools, air traffic agencies and organizations rendering specialized service to aviation.

Mr. Rentschler traced the growth of the organization, which now has 14 distinct working sections. The year covered in his report saw the formation of the distributor and dealers section, air transport section, finance and insurance section, flying school section, aircraft show section, accessory, material and equipment section, legal and legislative research service and the inauguration of a full-time service bureau at Washington, D. C.

Metropolitan Section Meets

NEW YORK, Jan. 27—Members of the Metropolitan Section of the Society of Automotive Engineers who were not in attendance at the annual meeting in Detroit, held a joint meeting here last week with the National Association of Engine and Boat Manufacturers. This meeting was held at the Hotel Roosevelt and was designated the Motor Boat Show Dinner, being held in connection with the Silver Jubilee Motor Boat Show at Grand Central Palace. Henry R. Sutphen, vice-president of the Electric Boat Co., and president of the National Association of Engine and Boat Manufacturers, presided.

Ford Ships Set Record

DETROIT, Jan. 27—Freight ships in the Great Lakes fleet of the Ford Motor Co. set a new record last year when 3,117,495 tons were carried, it has been announced. This represents an increase of nearly 500,000 tons over 1928 and nearly 1,000,000 tons over 1927.

Calendar of Coming Events

SHOWS

Chicago National, Coliseum..Jan. 25-Feb. 1
Washington, D. C., Automobile Jan. 25-Feb. 1
Cleveland Automobile Show..Jan. 25-Feb. 1
Copenhagen Trucks, etc. ....Jan. 25-Feb. 2
Portland, Me., Automobile...Jan. 27-Feb. 1
Wilkes-Barre, Automobile ...Jan. 27-Feb. 1
Hillsdale, Mich., Automobile, Jan. 28-Feb. 1
Lancaster, Pa., Automobile..Jan. 28-Feb. 1
San Francisco, Cal., Automobile..Feb. 1-8
Minneapolis-St. Paul, Automobile..Feb. 1-8
Toledo, Ohio, Automobile .....Feb. 3-8
Wichita, Automobile .....Feb. 3-8
Cumberland, Automobile .....Feb. 3-8
Syracuse, Automobile .....Feb. 3-8
Ottawa, Automobile .....Feb. 3-8
St. Louis, Automobile .....Feb. 3-8
Elgin, Ill., Automobile .....Feb. 5-8
Cincinnati, Aircraft .....Feb. 8-14
Albany, Automobile .....Feb. 8-15
Akron, Automobile .....Feb. 8-15
Kansas City, Automobile .....Feb. 8-15
Columbus, Ohio, Auto-Plane .....Feb. 9-13
New York, American Legion, Aviation .....Feb. 9-15
Denver Automobile .....Feb. 10-15
Indianapolis, Automobile .....Feb. 10-15
Sheboygan, Automobile .....Feb. 10-16
Mankato, Automobile .....Feb. 12-15
Black Hills, S. D., Automobile...Feb. 12-15
Peoria, Automobile .....Feb. 12-16
Providence, Automobile .....Feb. 14-22
Canton, Automobile .....Feb. 15-22
St. Louis, International Aircraft..Feb. 15-23
Omaha, Automobile .....Feb. 17-22
Copenhagen, Automobile .....Feb. 21
Los Angeles, Automobile..Feb. 22-March 2
Camden, N. J., Automobile..Feb. 24-Mar. 1
Des Moines, Automobile ....Feb. 24-Mar. 1
Seattle, Wash., Automobile..Feb. 25-Mar. 2
Detroit (All-American Aircraft)..April 5-13
Asbury Park, N. J., Automobile..April 7-12

CONVENTIONS

Southwest Road Show and School, Wichita .....Feb. 25-28
American Society for Testing Materials, Regional Meeting, Detroit .....Mar. 19
American Society Mechanical Engineers, Fiftieth Anniversary Celebration:
New York .....April 5
Hoboken, N. J. .....April 7
Washington, D. C. .....April 8-9
National Foreign Trade Conference, Los Angeles, ...May 21-23
World Power Conference, Berlin..June 16-25
Railway Supply Mfrs. Assn., Meeting and Exhibit, Atlantic City...June 18-25
American Railway Association, San Francisco .....June 23-26
American Society for Testing Materials, Annual Meeting, Atlantic City .....June 23-27

SALONS

Hotel Biltmore, Los Angeles.....Feb. 8-15
Palace Hotel, San Francisco, Feb. 22-Mar. 1